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BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

KRISTIN K. MAYES - Chairman
GARY PIERCE
PAUL NEWMAN
SANDRA D. KENNEDY
BOB STUMP

IN THE MATTER OF THE APPLICATION OF
BLACK MOUNTAIN SEWER CORPORATION,
AN ARIZONA CORPORATION, FOR A
DETERMINATION OF THE FAIR VALUE OF
ITS UTILITY PLANT AND PROPERTY AND
FOR INCREASES IN ITS RATES AND
CHARGES FOR UTILITY SERVICE BASED
THEREON.

DOCKET NO. SW-02361A-08-0609

**NOTICE OF FILING
STAFF'S DIRECT TESTIMONY**

The Utilities Division of the Arizona Corporation Commission ("Staff") hereby provides notice of filing of the Direct Testimony of Crystal S. Brown, Juan C. Manrique, and Dorothy Hains in the above-referenced matter.

RESPECTFULLY SUBMITTED this 21st day of September, 2009.

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Arizona Corporation Commission
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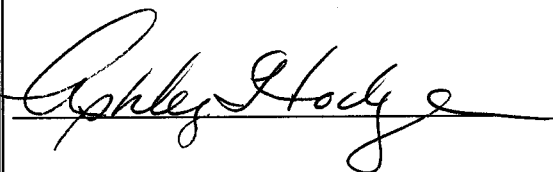
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**DIRECT
TESTIMONY**

OF

CRYSTAL S. BROWN

JUAN C. MANRIQUE

DOROTHY HAINS

DOCKET NO. SW-02361A-08-0609

**IN THE MATTER OF THE APPLICATION OF
BLACK MOUNTAIN SEWER CORPORATION
FOR A DETERMINATION OF THE FAIR VALUE
OF ITS UTILITY PLANT AND PROPERTY
AND FOR INCREASES IN ITS RATES AND
CHARGES FOR UTILITY SERVICE BASED
THEREON**

SEPTEMBER 21, 2009

BEFORE THE ARIZONA CORPORATION COMMISSION

KRISTIN K. MAYES

Chairman

GARY PIERCE

Commissioner

PAUL NEWMAN

Commissioner

SANDRA D. KENNEDY

Commissioner

BOB STUMP

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IN THE MATTER OF THE APPLICATION OF) DOCKET NO. SW-02361A-08-0609
BLACK MOUNTAIN SEWER CORPORATION,)
FOR A DETERMINATION OF THE FAIR VALUE)
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CHARGES FOR UTILITY SERVICE BASED)
THEREON.)
_____)

DIRECT

TESTIMONY

OF

CRYSTAL S. BROWN

PUBLIC UTILITIES ANALYST V

UTILITIES DIVISION

ARIZONA CORPORATION COMMISSION

SEPTEMBER 21, 2009

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EXECUTIVE SUMMARY
BLACK MOUNTAIN SEWER COMPANY, INC.
DOCKET NO. SW-02361A-08-0609

Black Mountain Sewer Company ("Black Mountain" or "Company") is a certificated Arizona public service corporation that provided wastewater utility service to approximately 2,000 customers during 2008 primarily in the Town of Carefree, in unincorporated portions of Maricopa County and in portions of the City of Scottsdale.

On December 19, 2008, Black Mountain filed an application for a permanent rate increase. The Company states that it incurred an adjusted test year operating loss of \$84,484 resulting in no rate of return.

Black Mountain proposed a \$913,780, or 57.83 percent, revenue increase from \$1,580,170 to \$2,493,950. The proposed revenue increase would produce an operating income of \$476,575 for a 12.80 percent rate of return on an original cost rate base of \$3,723,245. The Company's proposed rates would increase the typical residential bill from \$45.64 to \$71.08, for an increase of \$25.44 or 55.74 percent.

Staff recommends a \$483,140, or 30.58 percent, revenue increase from \$1,580,170 to \$2,063,310. Staff's proposed revenue increase would produce an operating income of \$345,824 for a 9.60 percent rate of return on an original cost rate base of \$3,602,336. Staff's recommended rates would increase the typical residential bill from \$45.64 to \$59.80, for an increase of \$14.16 or 31.02 percent.

1 **INTRODUCTION**

2 **Q. Please state your name, occupation, and business address.**

3 A. My name is Crystal S. Brown. I am a Public Utilities Analyst V employed by the Arizona
4 Corporation Commission ("ACC" or "Commission") in the Utilities Division ("Staff").
5 My business address is 1200 West Washington Street, Phoenix, Arizona 85007.

6
7 **Q. Briefly describe your responsibilities as a Public Utilities Analyst V.**

8 A. I am responsible for the examination and verification of financial and statistical
9 information included in utility rate applications. In addition, I develop revenue
10 requirements, prepare written reports, testimonies, and schedules that include Staff
11 recommendations to the Commission. I am also responsible for testifying at formal
12 hearings on these matters.

13
14 **Q. Please describe your educational background and professional experience.**

15 A. I received a Bachelor of Science Degree in Business Administration from the University
16 of Arizona and a Bachelor of Science Degree in Accounting from Arizona State
17 University.

18
19 Since joining the Commission in August 1996, I have participated in numerous rate cases
20 and other regulatory proceedings involving electric, gas, water, and wastewater utilities. I
21 have testified on matters involving regulatory accounting and auditing. Additionally, I
22 have attended utility-related seminars sponsored by the National Association of
23 Regulatory Utility Commissioners ("NARUC") on ratemaking and accounting designed to
24 provide continuing and updated education in these areas.

25

1 **Q. What is the scope of your testimony in this case?**

2 A. I am presenting Staff's analysis and recommendations in the areas of rate base, operating
3 revenues and expenses, revenue requirement, and rate design regarding Black Mountain
4 Sewer Company, Inc.'s ("Black Mountain" or "Company") application for a permanent
5 rate increase. Staff witness Juan Manrique is presenting Staff's cost of capital
6 recommendations. Staff witness Dorothy Hains is presenting Staff's engineering analysis
7 and recommendations.
8

9 **Q. What is the basis of your recommendations?**

10 A. I performed a regulatory audit of Black Mountain's application to determine whether
11 sufficient, relevant, and reliable evidence exists to support the Company's requested rate
12 increase. The regulatory audit consisted of examining and testing the financial
13 information, accounting records, and other supporting documentation and verifying that
14 the accounting principles applied were in accordance with the Commission adopted
15 NARUC Uniform System of Accounts ("USOA").
16

17 **BACKGROUND**

18 **Q. Please review the background of this application.**

19 A. Black Mountain is a certificated Arizona public service corporation that provided
20 wastewater utility service to approximately 2,000 customers during 2008 primarily in the
21 Town of Carefree, in unincorporated portions of Maricopa County and in portions of the
22 City of Scottsdale.
23

24 In March 2001, Black Mountain became a wholly owned subsidiary of Algonquin Water
25 Resources. Algonquin Water Resources is Black Mountain's only shareholder.
26 Algonquin Water Resources is a wholly owned subsidiary of Algonquin Power Income

1 Fund¹ (Algonquin Water Resources and Algonquin Power Income Fund are collectively
2 referred to as "Algonquin").
3

4 In addition to Black Mountain, Algonquin owns seven other companies located in
5 Arizona: Litchfield Park Service Company, Gold Canyon Sewer Company, Rio Rico
6 Utilities, Inc., Entrada Del Oro Sewer Company, Northern Sunrise Water Company, Inc.,
7 Southern Sunrise Water Company, Inc., and Bella Vista Water Company. Algonquin has
8 a contract to manage and operate Black Mountain. Algonquin also owns and/or operates
9 utility systems in Illinois and Texas.
10

11 Black Mountain's current rates were authorized in Decision No. 69164, dated December
12 5, 2006. That Decision authorized a \$246,257 revenue increase that provided a 9.60
13 percent rate of return on a \$1,472,969 fair value rate base.
14

15 **Q. What are the primary reasons for the Company's requested permanent rate**
16 **increase?**

17 **A.** According to the Company, the primary reasons are to recover increased operating
18 expenses and to earn its authorized rate of return on its rate base which has increased
19 significantly since the last rate case.
20

¹ Algonquin Power Income Fund is an investment trust that owns or has interests in 71 companies in the United States and Canada, including 41 hydroelectric facilities, five natural gas cogeneration facilities, and 15 water and sewer facilities.

1 **CONSUMER SERVICE**

2 **Q. Please provide a brief history of customer complaints received by the Commission**
3 **regarding Black Mountain.**

4 A. Staff reviewed the Commission's records and found that, as of September 4, 2009, there
5 were 60 opinions and 10 petitions with 459 signatures, all from Black Mountain's
6 customers opposed to the rate increase.

7
8 **COMPLIANCE**

9 **Q. Please provide a summary of the compliance status of Black Mountain.**

10 A. A check of the ACC's Compliance Database indicates that there are currently no
11 delinquencies for Black Mountain.

12
13 **SUMMARY OF PROPOSED REVENUES**

14 **Q. Please summarize the Company's filing.**

15 A. The Company proposes total annual operating revenue of \$2,493,950. This represents an
16 increase of \$913,780, or 57.83 percent, over test year revenue of \$1,580,170. The
17 proposed revenue increase would produce an operating income of \$476,575 for a 12.80
18 percent rate of return on an original cost rate base of \$3,723,245. The Company's
19 proposed rates would increase the typical residential bill from \$45.64 to \$71.08, for an
20 increase of \$25.44 or 55.74 percent.

21
22 **Q. Please summarize Staff's recommended revenue.**

23 A. Staff recommends a \$483,140, or 30.58 percent, revenue increase from \$1,580,170 to
24 \$2,063,310. Staff's recommended revenue increase would produce an operating income
25 of \$345,824 for a 9.60 percent rate of return on an original cost rate base of \$3,602,336.

Staff's recommended rates would increase the typical residential bill from \$45.64 to \$59.80, for an increase of \$14.16 or 31.02 percent.

Q. What test year did Black Mountain use in this filing?

A. Black Mountain's rate filing is based on the twelve months ended June 30, 2008 ("test year").

Q. Please summarize the rate base and operating income recommendations and adjustments addressed in your testimony for Black Mountain.

A. My testimony addresses the following issues:

Unrecorded Plant Retirement and Plant Addition – This adjustment increases Plant in Service by \$263,777 to reflect a \$13,208 unrecorded plant retirement and a \$276,985 unrecorded plant addition.

Expensed Plant Costs, Plant In Service – This adjustment increases Plant in Service by \$9,141 to reflect plant that the Company expensed when paid rather than capitalized and depreciated.

Accumulated Depreciation – This adjustment decreases accumulated depreciation by \$10,871 to reflect the applicable amount based on Staff's recommended plant balance.

Advances in Aid of Construction ("AIAC") – This adjustment increases AIAC by \$276,985 to reflect the addition of a new lift station that was funded with AIAC.

1 Cash Working Capital ("CWC") – This adjustment decreases cash working capital by
2 \$127,851 to reflect the CWC calculation methodology adopted by the Commission in the
3 Company's last rate proceeding.

4
5 Corporate Expense Allocation – This adjustment decreases operating expenses by \$24,492
6 to remove costs incurred related to the unregulated affiliate's business operations.

7
8 Affiliate Increase – This adjustment decreases operating expenses by \$50,302 to remove
9 additional affiliate costs not incurred during the test year.

10
11 Expensed Plant Costs, Operating Expenses – This adjustment decreases operating
12 expenses by \$9,141 to remove plant costs that the Company inappropriately expensed.

13
14 Normalized Maintenance, Legal, and Engineering Expense – This adjustment decreases
15 operating expenses by \$29,941 to reflect maintenance, legal, and engineering expenses at
16 a normalized level.

17
18 Bad Debt Expense – This adjustment decreases operating expenses by \$4,067 to remove
19 bad debt expense that was not actually incurred.

20
21 Rents Expense – This adjustment increases operating expenses by \$17,034 to reflect the
22 increased rent cost of an independent third party contract for the Carefree office.

23
24 Transportation Expense – This adjustment decreases operating expenses by \$5,375 to
25 allocate a portion of a new truck lease to an affiliate.

26

1 Wastewater Testing Expense – This adjustment decreases operating expenses by \$2,593 to
2 reflect Staff’s calculation of annual test expenses based on the Company’s Aquifer
3 Protection Permit (“APP”) No. 11175 monitoring requirements and the monitoring
4 requirements in the Scottsdale Agreement.

5
6 Bonuses, Meals, and Other Costs – This adjustment decreases operating expenses by
7 \$14,945 to remove expenses that are not needed for the provision of service.

8
9 Depreciation Expense – This adjustment increases operating expenses by \$10,041 to
10 reflect Staff’s calculation of depreciation expense based upon Staff’s recommended plant
11 balances.

12
13 Taxes Other Than Income – This adjustment increases operating expense by \$1,780 to
14 properly reflect the Taxes Other Than Income account balance at the end of the test year.

15
16 Property Tax Expense – This adjustment decreases operating expense by \$5,179 to reflect
17 Staff’s calculation of the Company’s property tax expense.

18
19 Income Tax Expense – This adjustment decreases operating expenses by \$14,370 to
20 reflect the income tax obligation on Staff’s adjusted test year taxable income.
21

RATE BASE

Fair Value Rate Base

Q. Did the Company prepare a Schedule showing the elements of Reconstruction Cost New Rate Base?

A. No, the Company did not. The Company requested that its original cost rate base ("OCRB") be treated as its fair value rate base.

Rate Base Summary

Q. Please summarize Staff's adjustments to Black Mountain's rate base shown on Schedules CSB-3 and CSB-4.

A. Staff's adjustments to Black Mountain's rate base resulted in a net decrease of \$120,909, from \$3,723,245 to a \$3,602,336. This decrease was primarily due to Staff adding unrecorded plant and AIAC and reflecting cash working capital.

Rate Base Adjustment No. 1 – Unrecorded Plant Retirement and Plant Addition

Q. What amount of plant is the Company proposing for Account No. 370, Receiving Wells?

A. The Company is proposing \$690,628, as shown on Schedule CSB-5.

Q. Did the Company make any changes to receiving well plant during the test year that was not recorded in its general ledger?

A. Yes, the Company retired an old receiving well and replaced it with a new one. In response to data requests DH 2.4 and 2.5 issued by Staff's Engineering witness, Dorothy Hains, the Company indicated that it should have removed the cost of the Old Trade Center Lift Station (estimated to be \$13,208) and added the \$276,985 cost of the

1 replacement receiving well at the end of the test year. Staff reviewed the Company's
2 documentation and is in agreement.

3
4 **Q. What is Staff's recommendation?**

5 A. Staff recommends increasing plant in service by \$263,777 to reflect a plant retirement of
6 \$13,208 and plant addition of \$276,985, as shown on Schedules CSB-4 and CSB-5.

7
8 *Rate Base Adjustment No. 2 – Expensed Plant*

9 **Q. What guidance should companies use in determining whether a cost should be**
10 **capitalized by recording it in a plant account or treated as an operating expense?**

11 A. The Arizona Administrative Code R14-2-411 D.2 requires water companies to maintain
12 their accounting records in accordance with the NARUC USOA. The rule states, "Each
13 utility shall maintain its books and records in conformity with the Uniform System of
14 Accounts for Class A, B, C and D Water Utilities" (emphasis added).

15
16 Further, the NARUC USOA provides a listing of plant accounts and the types of costs that
17 should be recorded in each account. Utilities should use the plant account listing and
18 Accounting Instruction No. 14 "Utility Plant – Components of Construction Costs" to
19 determine what costs should be recorded as plant.

20
21 **Q. Did Black Mountain expense costs that, according to the NARUC USOA, should be**
22 **recorded in plant accounts?**

23 A. Yes, the Company expensed plant costs incurred for surveying, pumps and installation,
24 and new cables and filters for plant sewers, as shown on Schedule CSB-6.

25

1 **Q. What is the effect of expensing rather than capitalizing plant?**

2 A. Expensing plant violates the matching principle. The matching principle is the underlying
3 basis of accrual accounting, which is required by the NARUC USOA. The matching
4 principle requires that revenues earned in an accounting period be matched to the expenses
5 incurred during that same accounting period.

6
7 The practice of expensing plant violates the matching principle because the entire cost of
8 the asset is matched to only one accounting period even though the asset will benefit many
9 accounting periods. Adherence to the matching principle and the NARUC USOA requires
10 that the cost of an asset that benefits more than one accounting period be capitalized (by
11 recording it in a plant account) and depreciated over the asset's useful life.

12
13 **Q. What is Staff's recommendation?**

14 A. Staff recommends increasing plant in service by \$9,141 to reclassify plant that was
15 incorrectly recorded as an operating expense, as shown on Schedules CSB-4 and CSB-6.

16
17 *Rate Base Adjustment No. 3 – Accumulated Depreciation*

18 **Q. What adjustments did Staff make to Accumulated Depreciation?**

19 A. Staff adjusted accumulated depreciation to reflect plant added during the test year but not
20 recorded in the Company's general ledger and plant that was expensed rather than
21 capitalized.

22
23 **Q. What is Staff's recommendation?**

24 A. Staff recommends decreasing accumulated depreciation by \$10,871, as shown on
25 Schedules CSB-4 and CSB-7.

26

Rate Base Adjustment No. 4 – Advances In Aid of Construction

Q. What adjustments did Staff make to AIAC?

A. Staff increased AIAC to reflect the addition of the \$276,985 new receiving well discussed in Rate Base Adjustment No. 1 that was funded with AIAC.

Q. What is Staff's recommendation?

A. Staff recommends increasing AIAC by \$276,985, as shown on Schedules CSB-4 and CSB-8.

Rate Base Adjustment No. 5 – Cash Working Capital

Q. What amount of cash working capital is Black Mountain proposing to include in rate base?

A. Black Mountain is proposing to include no cash working capital in rate base.

Q. Did the Commission, in the Company's last rate proceeding, include cash working capital in rate base?

A. Yes.

Q. Did Staff calculate its recommended cash working capital using the same methodology adopted by the Commission in that case?

A. Yes. As shown on Schedule CSB-9, Staff utilized the same methodology that was adopted by the Commission in the Company's previous case.

Q. What is Staff recommending for Cash Working Capital?

A. Staff recommends a negative \$127,713 cash working capital, as shown on Schedules CSB-4 and CSB-9.

Deferred Regulatory Asset – Scottsdale Wastewater Treatment Capacity

Q. Did the Company purchase additional wastewater treatment capacity from the City of Scottsdale?

A. Yes, the Company purchased 81,049 gallons per day of treatment capacity from the City of Scottsdale for \$486,294. The purchase agreement stays in effect for ten years.

Q. How is the Company proposing to recover the cost of the additional treatment capacity?

A. The Company is proposing to amortize the \$486,294 over ten years. One-tenth of the amount, or \$48,628, would be included in operating expense in the test year and the remaining unamortized balance would be included in rate base as a deferred regulatory asset.

Q. Is the Company's proposed accounting treatment consistent with the way Scottsdale Treatment Capacity costs are currently recovered?

A. No. In the Company's prior rate case, the Commission included the entire cost of the treatment capacity in operating expense.

Q. Is a departure from the current accounting treatment warranted in this proceeding?

A. Yes. A change in accounting treatment is warranted because costs that result in multi-year benefits should be distributed over the benefit period in accordance to the matching principle. Further, this accounting treatment will mitigate the impact on customers' rates.

Q. What is Staff's recommendation?

A. Staff recommends adopting the Company's proposed recovery of additional Scottsdale treatment capacity.

OPERATING INCOME

Operating Income Summary

Q. What are the results of Staff's analysis of Test Year revenues, expenses and operating income?

A. As shown on Schedules CSB-10 and CSB-11, Staff's analysis resulted in Test Year revenues of \$1,580,170, expenses of \$1,533,104 and operating income of \$47,066.

Operating Income Adjustment No. 1 – Corporate Expense Allocation

Q. What is the Algonquin Power Income Fund ("Fund" or "APIF")?

A. The Algonquin Power Income Fund, the ultimate parent of Black Mountain, is an unregulated company whose primary business activity is the acquisition and ownership of generation and infrastructure companies through security investments. At year-end 2007, APIF consisted of four main divisions as follows:

	2007 Divisions	
	Types of Facilities in Divisions	No. of Facilities
1	Hydroelectric	41
2	Cogeneration – Equity Interest Only	2
	Cogeneration – Own/Operate	3
3	Alternative Fuels – Equity Interest Only	3
	Alternative Fuels – Own/Operate	5
4	Infrastructure (Water & Sewer)	17
	Total Number of Facilities	71

1 **Q. Please describe the position of Black Mountain within APIF's organizational**
2 **structure.**

3 A. According to the organizational chart provided in response to MEM 1.2, Algonquin Power
4 Income Fund owns Algonquin Holdco, who in turn, owns Algonquin Power Fund Canada,
5 who in turn, owns Algonquin Power Income Fund, who in turn, owns Algonquin Power
6 Fund America, who in turn, owns Algonquin Water Resources of America, who in turn,
7 owns Black Mountain Sewer Company.
8

9 **Q. What were the charges from these affiliates to Black Mountain?**

10 A. Algonquin Power Systems billed \$137,630, Algonquin Power Trust billed \$82,045, and
11 Algonquin Water Services billed \$1,680,443, for a total of \$1,900,118 in billings from
12 affiliates.
13

14 **Q. What is the primary goal of cost allocation between an unregulated affiliate and a**
15 **regulated affiliate?**

16 A. The primary goal is the fair distribution of costs between the unregulated and regulated
17 affiliate through proper allocations.
18

19 **Q. What effect does improperly allocated costs have on rate payers?**

20 A. When costs incurred primarily for the benefit of an unregulated affiliate's business are
21 improperly identified and allocated as overhead/common costs, then costs of the
22 unregulated affiliate are shifted to the captive customers of the regulated utility. This cost
23 shifting results in the captive customers of the regulated utility subsidizing the business
24 operations of the unregulated affiliate. This harms customers by creating artificially
25 higher rates. The costs of a regulated utility, such as Black Mountain, should only include
26 those costs that would have been incurred on a "stand-alone basis".

1 **Q. What is the definition of “stand-alone basis”?**

2 A. “Stand-alone basis” means reflecting costs as if the regulated utility produced the service
3 by itself. This helps to ensure that any subsidization of the unregulated business by the
4 captive utility customers is eliminated.

5
6 **Q. What is the amount of expense that was allocated from the APIF unregulated
7 business operations to Black Mountain during the test year?**

8 A. Black Mountain was allocated \$26,944² during the test year.

9
10 **Q. How was the allocation to Black Mountain made?**

11 A. First, \$3.95 million in expenses from the unregulated affiliate were allocated to the
12 infrastructure division based on a single allocation factor of 26.98 percent³. Those costs
13 were then allocated to each company within the infrastructure division based upon
14 customer count (MEM 4.1).

15
16 **Q. Did Staff review the amounts comprising the \$3.95 million of expenses allocated from
17 the unregulated affiliate to Black Mountain?**

18 A. Yes.

19
20 **Q. Does Staff agree that all of the \$3.95 million in costs are costs that should be
21 allocated?**

22 A. No, Staff does not. Staff reviewed the underlying invoices for the costs and determined
23 that the company did not identify the costs as direct costs (i.e., costs that can be identified
24 with a particular service) or indirect costs (costs that cannot be identified with a particular

² However, the Company’s response to data request MEM 4-1 indicated that \$33,732 was allocated to Black Mountain.

³ This factor is based on the number of infrastructure facilities to total facilities (MEM 7.1)

1 service) consistent with the NARUC Guidelines for Cost Allocation and Affiliate
2 Transactions. These guidelines require that the costs primarily attributable to a business
3 operation should be, to the extent appropriate, directly assigned to that business operation.
4

5 **Q. What amount of the \$3.95 million did Staff determine was attributable to (i.e., direct**
6 **costs of) APIF or an affiliate?**

7 A. Based upon review of the actual supporting invoices provided by the Company, Staff
8 determined that almost all of the costs were obviously attributable to the operations of the
9 APIF or one of its affiliates, therefore Staff assigned 90 percent of the costs to APIF. The
10 remaining ten percent recognizes that the other affiliates receive a benefit from the
11 common costs, and therefore, should be allocated a percentage greater than zero.
12

13 **Q. Does Staff agree that all of the \$3.95 million of expenses allocated from the**
14 **unregulated affiliate are allowable costs?**

15 A. No, Staff does not. As shown on schedule CSB-12, Page 2, Staff identified \$191,828 in
16 unallowable costs. For example, Staff identified \$68,350 for charitable contributions,
17 \$5,066 for season tickets for hockey games, \$3,500 for Superbowl tickets, \$16,864 for
18 gold watches and clocks; and \$33,000 for IRS taxes and penalties related to the affiliate's
19 unregulated business operations.
20

21 **Q. Does Staff agree with the Company's calculation of the factor to allocate common**
22 **costs?**

23 A. No, Staff does not.
24

25 **Q. What allocation formula did the Company use to allocate common costs?**

26 A. The Company used the following formula: 17 utilities / 63 total facilities = 26.98%.

1 **Q. Does Staff agree with the number of total facilities that the Company used in its**
2 **formula?**

3 A. No, Staff does not. Staff attempted to match the number used in the formula to the
4 information in the 2006 and 2007 Algonquin Power Income Fund Annual Reports;
5 however, the numbers did not agree. The information in the 2006 and 2007 annual reports
6 is as follows:
7

Line No	Type of Facility	Year-End 2006	Year-End 2007	Average
1	Hydroelectric	48	41	44.5
2	Cogeneration – Equity Interest Only	2	2	2.0
3	Cogeneration – Own/Operate	3	3	3.0
4	Alternative Fuels – Equity Interest Only	3	3	3.0
5	Alternative Fuels – Own/Operate	14	5	9.5
6	Infrastructure (Water & Sewer)	15	17	16.0
7	Total Number of Facilities	85	71	78
8	Allocation Percentage (1 / L7)	1.18%	1.42%	1.28%

8
9 **Q. What data should the Company use for its common cost allocation formula?**

10 A. Staff recommends that the year-end information per the Algonquin Power annual report be
11 used to determine the number of total facilities. For test year purposes, the allocations
12 made during the first six months of the test year (i.e., July to December 2007) should be
13 based upon the year-end 2006 data and the allocations made during the last six months of
14 the test year (i.e., January to June 2008) should be based upon the 2007 year-end data.
15

1 **Q. Did Staff prepare a schedule of its recommended common costs and allocation**
2 **factor?**

3 A. Yes, Staff's calculations are shown on Schedule CSB-12.
4

5 **Q. What is Staff's recommendation?**

6 A. Staff recommends decreasing operating expense by \$24,492 to remove costs that were
7 improperly allocated from the unregulated affiliate to the regulated affiliate as shown on
8 Schedules CSB-11 and CSB-12.
9

10 *Operating Income Adjustment No. 2 – Affiliate Increase*

11 **Q. Did the Company include increases to affiliate costs that were not incurred in the test**
12 **year?**

13 A. Yes, the Company included \$50,302 for increases to affiliate expenses that were not
14 incurred during the test year.
15

16 **Q. Did Staff perform an analysis to determine whether inclusion of the affiliate**
17 **increases was justified?**

18 A. Yes. Staff reviewed payroll and other relevant data and determined that the increases
19 were not justified.
20

21 **Q. What is Staff's recommendation?**

22 A. Staff recommends decreasing operating expense by \$50,302 to remove increases to
23 affiliate expenses that were not incurred during the test year, as shown on Schedules CSB-
24 11 and CSB-13.
25

Operating Income Adjustment No. 3 – Expensed Plant

Q. Did Black Mountain inappropriately record as operating expenses, costs that should have been capitalized and depreciated?

A. Yes, as Staff discussed in Rate Base Adjustment No. 2, Expensed Plant, Black Mountain inappropriately recorded as operating expenses costs that according to the NARUC USOA and the matching principle should be capitalized and depreciated, as shown on Schedule CSB 14.

Q. What treatment does Staff recommend for the Company's expensed plant costs?

A. Staff recommends that the costs be treated consistent with the NARUC USOA and the matching principle. Staff recommends including these costs in rate base and excluding them from test year operating expenses.

Q. What is Staff's recommendation?

A. Staff recommends decreasing operating expenses by \$9,141, as shown on Schedules CSB-11 and CSB-14.

Operating Income Adjustment No. 4 – Normalized Maintenance, Legal and Engineering Costs

Q. Has Staff prepared a schedule identifying operating expenses that should be normalized?

A. Yes. Staff identified certain maintenance, legal and engineering expenses that should be adjusted, as shown on Schedule CSB-15.

Q. What maintenance expense did Staff adjust?

A. Staff adjusted the cost for the clean-up of a major sewage spill that was reported to the Arizona Department of Environment Quality and to the Commission. The cost of the spill

1 was \$39,870. Staff does not expect that the Company will incur this level of expense
2 every year; therefore, Staff normalized the expense using a three-year period.
3

4 **Q. What legal and engineering expense did Staff adjust?**

5 A. The Company's legal and engineering expense for the years ended June 30, 2006, 2007,
6 and 2008, were \$5,503, \$4,639, and \$9,362, respectively. Because the test year expense
7 increased by approximately 100 percent from the prior year and was abnormally high,
8 Staff normalized the amount using a three-year period.
9

10 **Q. What is Staff's recommendation?**

11 A. Staff recommends decreasing operating expenses by \$29,941, as shown on Schedules
12 CSB-11 and CSB-15.
13

14 *Operating Income Adjustment No. 5 – Bad Debt Expense*

15 **Q. Did the Company include a provision for bad debt in the test year expenses?**

16 A. Yes, Black Mountain included \$11,965 for bad debt expense in test year expenses, as
17 shown on Schedule CSB-16.
18

19 **Q. Did Staff analyze the revenues, bad debt provision, and actual bad debt write-offs for
20 the test year?**

21 A. Yes. Staff determined that the Company had included \$5,926 in bad debt expense that
22 was incurred in the years ended June 30, 2006 and 2007. Since this expense was not
23 within the test year, Staff removed it.
24

1 **Q. What effect does recognizing the Company's proposed Bad Debt Expense have on**
2 **the revenue requirement?**

3 A. It increases the revenue requirement and allows recovery of an expense the Company did
4 not experience in the test year.

5
6 **Q. What is Staff's recommendation?**

7 A. Staff recommends decreasing operating expense by \$5,926, as shown on Schedules CSB-
8 13 and CSB-16.

9
10 *Operating Income Adjustment No. 6 – Rents, Building Expense*

11 **Q. What did the Company propose for rents expense?**

12 A. The Company proposed \$19,830 for rents expense, as shown on Schedule CSB-11. The
13 expense was incurred for the office space located in Carefree.

14
15 **Q. What adjustment did Staff make to rents expense?**

16 A. The test year included only six months of office expense. Staff calculated an annualized
17 rents expense of \$36,864 by multiplying the new contract rate of \$3,072 per month (which
18 included a price increase) by 12 months as shown on Schedule CSB-17. The owner of the
19 office building is not an affiliate of Black Mountain.

20
21 **Q. What is Staff's recommendation?**

22 A. Staff recommends increasing operating expenses by \$17,034, as shown on Schedules
23 CSB-11 and CSB-17.

24

Operating Income Adjustment No. 7 – Transportation Expense

Q. What did the Company propose for transportation expense?

A. The Company proposed \$34,445 for transportation expense, as shown on Schedule CSB-11. This level of transportation expense represents an increase of over 100 percent (or \$17,854) from the 2007 expense of \$16,592.

Q. What was the primary cause of the increase?

A. The primary cause of the increase was the cost of a new Chevrolet Silverado truck lease.

Q. Was the truck lease signed by Black Mountain?

A. No, the lease was signed by Gold Canyon, an affiliate.

Q. Does Black Mountain maintain truck logs showing, among other things, the purpose of travel?

A. No, Black Mountain does not maintain truck logs.

Q. What adjustment did Staff make to transportation expense?

A. Staff removed half the cost of the new truck lease by allocating a portion of the cost to Gold Canyon.

Q. What is Staff's recommendation?

A. Staff recommends decreasing operating expenses by \$5,375, as shown on Schedules CSB-11 and CSB-18.

Operating Income Adjustment No. 8 – Testing Expense

Q. What did the Company propose for testing expense?

A. The Company proposed \$16,955 for testing expense.

Q. What adjustment did Staff make?

A. As discussed in greater detail by Staff witness, Dorothy Hains, Staff adjusted wastewater testing expense to reflect Staff's calculation of \$14,362 in annual testing expenses based on the Company's Aquifer Protection Permit ("APP") No. 11175 monitoring requirements and the monitoring requirements in the Scottsdale Agreement.

Q. What is Staff's recommendation?

A. Staff recommends decreasing operating expense by \$2,593, as shown on Schedules CSB-10 and CSB-19.

Operating Margin Adjustment No. 9 – Bonuses, Meals, and Other Expenses

Q. What is Black Mountain proposing for bonuses, meals, and other expenses?

A. Black Mountain is proposing \$14,945 for bonuses, meals, and other expenses, as shown on Schedule CSB-20.

Q. What ratemaking treatment does Staff recommend for these types of expenses?

A. Since these costs are not necessary to provide service, Staff recommends that they be recognized as non-operating expenses and excluded from the revenue requirement.

Q. What is Staff's recommendation?

A. Staff recommends decreasing operating expense by \$14,945, as shown on Schedules CSB-10 and CSB-20.

Operating Income Adjustment No. 10 – Depreciation Expense

Q. What is Black Mountain proposing for depreciation expense?

A. Black Mountain is proposing depreciation expense of \$224,818.

Q. What adjustment did Staff make to depreciation expense?

A. Staff adjusted depreciation expense to reflect application of the Staff-recommended depreciation rates to the Staff recommended plant balances.

Q. What is Staff's recommendation?

A. Staff recommends increasing depreciation expense by \$10,041, as shown on Schedules CSB-11 and CSB-21.

Operating Income Adjustment No. 11 – Taxes Other Than Income Expense

Q. What did Black Mountain propose for Taxes Other Than Income Expense?

A. Black Mountain proposed a negative \$1,780, as shown on Schedule CSB-11.

Q. Is the negative \$1,780 amount correct?

A. No. The Company stated in response to a data request (MEM 1.58) that the amount should be zero.

Q. What is Staff's recommendation?

A. Staff recommends increasing operating expense by \$1,780, as shown on Schedules CSB-11 and CSB-22.

Operating Income Adjustment No. 12 – Property Taxes

Q. What is Black Mountain proposing for Property Taxes?

A. Black Mountain is proposing \$7,760 for property taxes.

Q. Did Staff make any adjustment to the Property Tax Expense?

A. Yes. Staff's adjustment reflects Staff's calculation of the property tax expense using Staff's recommended revenues, as shown on Schedule CSB-23.

Q. What is Staff's recommendation?

A. Staff recommends decreasing operating expense by \$5,179, as shown on Schedules CSB-11 and CSB-23.

Operating Income Adjustment No. 13 – Income Taxes

Q. What is the Company proposing for test year Income Tax Expense?

A. Black Mountain is proposing \$7,760 for test year Income Tax Expense.

Q. Did Staff make any adjustments to test year Income Tax Expense?

A. Yes. Staff's adjustment reflects Staff's calculation of the income tax expense based upon Staff's adjusted test year taxable income, as shown on Schedule CSB-24.

Q. What is Staff's recommendation?

A. Staff recommends decreasing test year Income Tax Expense by \$14,370 as shown on Schedules CSB-11 and CSB-24.

PURCHASED WASTEWATER TREATMENT ADJUSTER MECHANISM

Q. Has Staff reviewed the Company's proposal for a Purchased Wastewater Treatment Adjuster Mechanism ("PWWAM")?

A. Yes.

Q. Does Staff agree with the Company's proposal?

A. No. An adjustor is generally used when a particular expense represents a significantly large percentage of total operating expenses and is highly volatile. In the instant case, the Company estimates that increases in purchased wastewater treatment costs could be as much as \$20,000 higher than the annual amount included in test year revenues. For Black Mountain, this amount represents only 1.3 percent (i.e., \$20,000/\$1,533,104) of Staff's total recommended expenses.

Q. What is Staff's recommendation?

A. Staff recommends denial of the Company proposed PWWAM.

OTHER MATTERS

Q. Did Staff notice a mathematical error on Schedule D-1?

A. Yes. The Company added \$271,031 (line 13 of Sch D-1) to Stockholder's Equity rather than subtracting the amount.

Q. Why should the number be subtracted?

A. The Company made a pro-forma adjustment to lower the Amortization of Contributions in Aid of Construction ("CIAC") by \$271,031 (Schedule B-2). Since amortization of CIAC reduces depreciation expense, then a lower amount of amortization of CIAC would cause depreciation expense to increase. A higher amount of depreciation expense results in a

1 lower net income. A lower net income results in a lower amount of equity. Therefore, the
2 amount should have been subtracted from actual test year equity rather than added.

3
4 **Q. What is the correct amount of equity that should be shown on Schedule D-1?**

5 A. Schedule D-1 should shows equity in the amount of \$3,672,493 calculated as follows:

6

	Adjusted Test Year Per Company	Difference	Adjusted Test Year Per Staff
Actual Equity at 6/30/2008	\$3,772,970 (Sch E-1, L 30)		\$3,772,970 (Sch E-1, L 30)
Proforma Adj for Amort of CIAC	+ 271,031 (Sch D-1, L 13)	542,062	+ 271,031 (Sch D-1, L 13)
Proforma Adj for Deferred Taxes	+ 170,554 (Sch D-1, L 14)		- 170,554 (Sch D-1, L 14)
	\$4,214,556 (Sch D-1, L 8)	\$542,062	\$3,672,493 (Sch JCM-10)

7
8 **Q. Does Staff Witness Juan Manrique use this corrected amount in Staff's cost of**
9 **capital analysis?**

10 A. Yes, Staff witness, Juan Manrique, presents this number in JCM-10.

11
12 **RATE DESIGN**

13 **Q. Has Staff prepared a schedule summarizing the present, Company proposed, and**
14 **Staff recommended rates and service charges?**

15 A. Yes. Schedule CSB-25 provides a summary of the Company's present, Company's
16 proposed, and Staff's recommended rates.

17
18 **Q. Please summarize the present rate design.**

19 A. The present monthly customer charge for the residential customers is \$45.61 with no
20 commodity charge. Regular commercial customers pay \$0.18298 per gallon per day of

1 sewer flow⁴ and no monthly service charge. Special commercial customers pay only a
2 monthly customer charge that varies by customer based on an estimate for each
3 customer's sewer volume flow.
4

5 **Q. Please summarize the Company's proposed rate design.**

6 A. The Company is proposing an approximate 56 percent increase for all residential and
7 commercial customers, an approximate 100 percent increase for special rate commercial
8 customers, and an approximate 23 percent increase for effluent customers.
9

10 **Q. Please summarize Staff's recommended rate design.**

11 A. Staff recommends an approximate 30.58 percent increase for all residential, commercial,
12 and effluent customers. Staff's rate design is presented in Schedule CSB-25.
13

14 *Hook-up Fee*

15 **Q. Has Staff reviewed the Company's proposal for a Hook-up Fee?**

16 A. Yes.
17

18 **Q. Does Staff agree with the Company's proposal?**

19 A. No, Staff does not agree, as discussed in greater detail by Staff witness, Dorothy Hains.
20

21 **Q. What is Staff's recommendation?**

22 A. Staff recommends denial of the Company-proposed Hook-up fee.
23

24 **Q. Does this conclude your Direct Testimony?**

25 A. Yes, it does.

⁴ Flow volume is based on the average daily flows set forth in the *Engineering Bulletin No. 12*, Table 1, published by the Arizona Department of Environmental Quality (June 1989).

REVENUE REQUIREMENT

<u>LINE NO.</u>	<u>DESCRIPTION</u>	(A) COMPANY FAIR VALUE	(B) STAFF FAIR VALUE
1	Adjusted Rate Base	\$ 3,723,245	\$ 3,602,336
2	Adjusted Operating Income (Loss)	\$ (84,484)	\$ 47,066
3	Current Rate of Return (L2 / L1)	-2.27%	1.31%
4	Required Rate of Return	12.80%	9.60%
5	Required Operating Income (L4 * L1)	\$ 476,575	\$ 345,824
6	Operating Income Deficiency (L5 - L2)	\$ 561,059	\$ 298,759
7	Gross Revenue Conversion Factor	1.6286	1.6172
8	Required Revenue Increase (L7 * L6)	\$ 913,780	\$ 483,140
9	Adjusted Test Year Revenue	\$ 1,580,170	\$ 1,580,170
10	Proposed Annual Revenue (L8 + L9)	\$ 2,493,950	\$ 2,063,310
11	Required Increase in Revenue (%)	57.83%	30.58%

GROSS REVENUE CONVERSION FACTOR

LINE NO.	DESCRIPTION	(A)	(B)	(C)	(D)
<u>Calculation of Gross Revenue Conversion Factor:</u>					
1	Revenue	100.0000%			
2	Uncollectible Factor (Line 11)	0.0000%			
3	Revenues (L1 - L2)	100.0000%			
4	Combined Federal and State Income Tax and Property Tax Rate (Line	38.1631%			
5	Subtotal (L3 - L4)	61.8369%			
6	Revenue Conversion Factor (L1 / L5)	1.617157			
<u>Calculation of Uncollectible Factor:</u>					
7	Unity	100.0000%			
8	Combined Federal and State Tax Rate (Line 23)	37.4294%			
9	One Minus Combined Income Tax Rate (L7 - L8)	62.5706%			
10	Uncollectible Rate	0.0000%			
11	Uncollectible Factor (L9 * L10)	0.0000%			
<u>Calculation of Effective Tax Rate:</u>					
12	Operating Income Before Taxes (Arizona Taxable Income)	100.0000%			
13	Arizona State Income Tax Rate	6.9680%			
14	Federal Taxable Income (L12 - L13)	93.0320%			
15	Applicable Federal Income Tax Rate (Line 55)	32.7429%			
16	Effective Federal Income Tax Rate (L14 x L15)	30.4614%			
17	Combined Federal and State Income Tax Rate (L13 +L16)		37.4294%		
<u>Calculation of Effective Property Tax Factor</u>					
18	Unity	100.0000%			
19	Combined Federal and State Income Tax Rate (L17)	37.4294%			
20	One Minus Combined Income Tax Rate (L18-L19)	62.5706%			
21	Property Tax Factor (CSB-16, L21)	1.1726%			
22	Effective Property Tax Factor (L20*L21)		0.7337%		
23	Combined Federal and State Income Tax and Property Tax Rate (L17+L22)			38.1631%	
24	Required Operating Income (Schedule CSB-1, Line 5)	\$ 345,824			
25	Adjusted Test Year Operating Income (Loss) (Schedule CSB-11, Line 3	47,066			
26	Required Increase in Operating Income (L24 - L25)		\$ 298,759		
27	Income Taxes on Recommended Revenue (Col. [E], L52)	\$ 172,106			
28	Income Taxes on Test Year Revenue (Col. [B], L52)	(6,610)			
29	Required Increase in Revenue to Provide for Income Taxes (L27 - L28)		178,716		
30	Recommended Revenue Requirement (Schedule CSB-1, Line 10)	\$ 2,063,310			
31	Uncollectible Rate (Line 10)	0.0000%			
32	Uncollectible Expense on Recommended Revenue (L30*L31)	\$ -			
33	Adjusted Test Year Uncollectible Expense	\$ -			
34	Required Increase in Revenue to Provide for Uncollectible Exp. (L32-L33)		-		
35	Property Tax with Recommended Revenue (CSB-16, Col B, L16)	\$ 32,900			
36	Property Tax on Test Year Revenue (CSB-16, Col A, L16)	27,235			
37	Increase in Property Tax Due to Increase in Revenue (L35-L36)		5,665		
38	Total Required Increase in Revenue (L26 + L29 + L34 + L37)		\$ 483,140		
<u>Calculation of Income Tax:</u>					
39	Revenue (Schedule CSB-11, Col. [C], Line 5 & Sch. CSB-1, Col. [D] Li	\$ 1,580,170	\$ 483,140	\$ 2,063,310	
40	Operating Expenses Excluding Income Taxes	\$ 1,539,714		\$ 1,545,379	
41	Synchronized Interest (L56)	\$ 72,047		\$ 72,047	
42	Arizona Taxable Income (L39 - L40 - L41)	\$ (31,591)		\$ 445,884	
43	Arizona State Income Tax Rate	6.9680%		6.9680%	
44	Arizona Income Tax (L42 x L43)	\$ (2,201)		\$ 31,069	
45	Federal Taxable Income (L42 - L44)	\$ (29,389)		\$ 414,815	
46	Federal Tax on First Income Bracket (\$1 - \$50,000) @ 15%	\$ (4,408)		\$ 7,500	
47	Federal Tax on Second Income Bracket (\$51,001 - \$75,000) @ 25%	\$ -		\$ 6,250	
48	Federal Tax on Third Income Bracket (\$75,001 - \$100,000) @ 34%	\$ -		\$ 8,500	
49	Federal Tax on Fourth Income Bracket (\$100,001 - \$335,000) @ 39%	\$ -		\$ 91,650	
50	Federal Tax on Fifth Income Bracket (\$335,001 - \$10,000,000) @ 34%	\$ -		\$ 27,137	
51	Total Federal Income Tax	\$ (4,408)		\$ 141,037	
52	Combined Federal and State Income Tax (L44 + L51)	\$ (6,610)		\$ 172,106	
53	Applicable Federal Income Tax Rate [Col. [E], L51 - Col. [B], L51] / [Col. [E], L45 - Col. [B], L45]			32.7429%	
<u>Calculation of Interest Synchronization:</u>					
54	Rate Base (Schedule CSB-3, Col. (C), Line 17	\$ 3,602,336			
55	Weighted Average Cost of Debt (Schedule CSB-17, Col. [F], L1 + L2)	2.0000%			
56	Synchronized Interest (L45 X L46)	\$ 72,047			

BLACK MOUNTAIN SEWER CORPORATION
Docket No. SW-02361A-08-0609
Test Year Ended June 30, 2008

Schedule CSB-3

RATE BASE - ORIGINAL COST

LINE NO.	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENTS	Adj. No.	(C) STAFF AS ADJUSTED
1	Plant in Service	\$ 11,357,735		\$ 11,630,653
2	Less: Accumulated Depreciation	5,625,025		5,614,154
3	Net Plant in Service	<u>\$ 5,732,710</u>		<u>\$ 6,016,499</u>
<u>LESS:</u>				
4	Contributions in Aid of Construction (CIAC)	\$ 5,232,139		\$ 5,232,139
5	Less: Accumulated Amortization	4,214,384		\$ 4,214,384
6	Net CIAC	<u>1,017,755</u>		<u>\$ 1,017,755</u>
7	Advances in Aid of Construction (AIAC)	1,457,009		1,733,994
8	Customer Deposits	94,290		94,290
9	Deferred Income Tax Credits	(170,554)		(170,554)
<u>ADD:</u>				
9	Deferred Regulatory Assets	389,035		389,035
10	Cash Working Capital	-		(127,713)
11	Original Cost Rate Base	<u>\$ 3,723,245</u>		<u>\$ 3,602,336</u>

References:

Column (A), Company Schedule B-1

Column (B): Schedule MEM-4

Column (C): Column (A) + Column (B)

SUMMARY OF ORIGINAL COST RATE BASE ADJUSTMENTS

LINE NO.	ACCT. NO.	DESCRIPTION	[A] COMPANY AS FILED	[B] ADJ #1 Unrecorded Retirement & Addition Ref: Sch CSB-5	[C] ADJ #2 Expensed Plant Ref: Sch CSB-6	[D] ADJ #3 Accumulated Depreciation Ref: Sch CSB-7	[E] ADJ #4 AIAC Ref: Sch CSB-8	[F] ADJ #5 Cash Working Capital Ref: Sch CSB-9	[G] STAFF ADJUSTED
<u>PLANT IN SERVICE:</u>									
1		Organization	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2	351	Franchises	-	-	-	-	-	-	-
3	352	Land and Land Rights	461,300	-	-	-	-	-	461,300
4	353	Structures and Improvements	2,557,920	-	2,300	-	-	-	2,560,220
5	354	Power Generation Equipment	-	-	-	-	-	-	-
6	355	Collection Services - Force	-	-	1,600	-	-	-	-
7	360	Collection Services - Gravity	706,292	-	-	-	-	-	707,892
8	361	Special Collecting Structures	4,284,948	-	-	-	-	-	4,284,948
9	362	Services to Customers	-	-	-	-	-	-	-
10	363	Flow Measuring Devices	198,723	-	-	-	-	-	198,723
11	364	Flow Measuring Installations	31,512	-	-	-	-	-	31,512
12	365	Receiving Wells	179,622	-	-	-	-	-	179,622
13	370	Effluent Pumping Equipment	690,628	263,777	1,200	-	-	-	955,605
14	371	Treatment and Disposal Equipment	654,844	-	2,803	-	-	-	657,647
15	380	Plant Sewers	143,578	-	1,238	-	-	-	143,578
16	381	Outfall Sewer Lines	123,289	-	-	-	-	-	124,527
17	382	Other Plant & Misc. Equipment	-	-	-	-	-	-	-
18	389	Office Furniture & Equipment	939,432	-	-	-	-	-	939,432
19	390	Tools, Shop & Garage Equipment	224,587	-	-	-	-	-	224,587
20	391	Transportation Equipment	107,367	-	-	-	-	-	107,367
21	393	Laboratory Equipment	5,754	-	-	-	-	-	5,754
22	394	Power Operated Equipment	7,488	-	-	-	-	-	7,488
23	395	Communication Equipment	-	-	-	-	-	-	-
24	396	Other Tangible Plant	40,451	-	-	-	-	-	40,451
25	398		-	-	-	-	-	-	-
26			-	-	-	-	-	-	-
27			-	-	-	-	-	-	-
28		Total Plant in Service	\$ 11,357,735	\$ 263,777	\$ 9,141	\$ -	\$ -	\$ -	\$ 11,630,653
29		Less: Accumulated Depreciation	5,625,025	-	-	(10,871)	-	-	5,614,154
30			-	-	-	-	-	-	-
31		Net Plant in Service (L59 - L 60)	\$ 5,732,710	\$ 263,777	\$ 9,141	\$ 10,871	\$ -	\$ -	\$ 6,016,499
32			-	-	-	-	-	-	-
33		<u>LESS:</u>							
34		Contributions in Aid of Construction (CIAC)	\$ 5,232,139	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 5,232,139
35		Less: Accumulated Amortization	4,214,384	-	-	-	-	-	4,214,384
36		Net CIAC (L25 - L26)	1,017,755	-	-	-	-	-	1,017,755
37		Advances in Aid of Construction (AIAC)	1,457,009	-	-	-	276,985	-	1,733,994
38		Customer Deposits	94,290	-	-	-	-	-	94,290
39		Deferred Income Taxes	(170,554)	-	-	-	-	-	(170,554)
40			-	-	-	-	-	-	-
41			-	-	-	-	-	-	-
42		<u>ADD:</u>							
43		Deferred Reg Asset - Unamortized Balance of Scottsdale Treatment	389,035	-	-	-	-	(127,713)	389,035
44		Cash Working Capital	-	-	-	-	-	-	(127,713)
45			-	-	-	-	-	-	-
46		Original Cost Rate Base	\$ 3,723,245	\$ 263,777	\$ 9,141	\$ 10,871	\$ (276,985)	\$ (127,713)	\$ 3,602,336

**RATE BASE ADJUSTMENT NO. 1 - UNRECORDED PLANT RETIREMENT
AND PLANT ADDITION**

LINE NO.	Description	[A]		[B]		[C]	
		COMPANY AS FILED		ADJUSTMENTS		STAFF AS ADJUSTED Col A - Col B	
1	Account 370 - Receiving Wells	\$	690,628	\$	-	\$	690,628
2	Old Trade Center Lift Station		-		(13,208)		(13,208)
3	New Trade Center Lift Station		-	\$	276,985		276,985
4		\$	690,628	\$	263,777	\$	954,405

References:

Column A: Company Schedule B-2, Page 3

Column B: Testimony, CSB, Company Data Request Responses DH 2.4 and 2.5

Column C: Column [A] + Column [B]

RATE BASE ADJUSTMENT NO. 2 - EXPENSED PLANT

			[A]	[B]	[C]
LINE NO.	Plant Account Number	Description	COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED (Col A + Col B)
1	354	Structures and Improvemnts	\$ 461,300	\$ 2,300	\$ 463,600
2	360	Collection Services, Force	\$ 706,292	\$ 1,600	\$ 707,892
3	370	Receiving Wells	\$ 690,628	\$ 1,200	\$ 691,828
4	371	Effluent Pumping Equip	\$ 654,844	\$ 2,803	\$ 657,647
5	381	Plant Sewers	\$ 123,289	\$ 1,238	\$ 124,527
6		Total	\$ 2,636,353	\$ 9,141	\$ 2,645,494
7					
8					
9	FROM CONTRACTUAL SERVICES, LEGAL & ENGINEERING EXPENSE (MEM 1.55)				
10	Acct. No.	Vendor Name	Description	Amount	
11	354 - Structures & Improv	Consulting Land Surveyors	Locate existing and set new boundaries	\$ 1,500.00	
12					
13					
14	FROM CONTRACTUAL SERVICES, OTHER EXPENSE (MEM 1.55)				
15	Acct. No.	Vendor Name	Description	Amount	
16	354 - Structures & Improv	Consulting Land Surveyors	Locate existing and set new boundaries	\$ 800.00	
17					
18					
19	360-Collection Svcs, Force	ADEQ Approval to Construct	Certificate	\$ 1,600.00	
20	370-Receiving Wells	ADEQ Approval to Construct	Certificate	\$ 1,200.00	
21			Subtotal	\$ 2,800.00	
22					
23	371-Effluent Pumping Plant	Keller Equipment Company	Install submersible Pumps	\$ 1,212.00	
24	371-Effluent Pumping Plant	Keller Equipment Company	Set two pumps; pull one	\$ 1,591.25	
25			Subtotal	\$ 2,803.25	
26					
27					
28	381-Plant Sewers	KSK Electric	New cables, sand filters	\$ 1,237.72	
29					
30			Total for Contractual Services, Other	\$ 7,640.97	
31					
32			Grand Total	\$ 9,140.97	

References:

Column A: Company Schedule B-2, Page 3
Column B: Testimony, CSB, Company Data Request Responses MEM 1.55
Column C: Column [A] + Column [B]

RATE BASE ADJUSTMENT NO. 3 - ACCUMULATED DEPRECIATION

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Accumulated Depreciation	\$ 5,625,025	\$ (10,871)	\$ 5,614,154

References:

Column A: Company Schedule B-1, Page 1
Column B: Testimony, CSB; Schedule CSB-7, Page 5 of 5
Column C: Column [A] + Column [B]

PLANT AND ACCUMULATED DEPRECIATION
With Staff Recommended Plant Adjustments

	Staff 31-Dec-04 Original Cost	Staff 31-Dec-04 Accumulated Depreciation	Depreciation Rates		2005 Additions	2005 Retirements	Depreciation Expense	2005 Total Cost	2005 Accumulated Depreciation
			Before Dec. 69164	After Dec. 69164					
351 Organization Cost	\$0	\$0	0.00%	0.00%	\$0	\$0	\$0	\$0	\$0
352 Franchise Cost	\$0	\$0	0.00%	0.00%	\$0	\$0	\$0	\$0	\$0
353 Land & Land Rights	\$461,300	\$0	0.00%	0.00%	\$0	\$0	\$0	461,300	0
354 Structures & Improvements	\$1,239,905	\$888,015	5.00%	3.33%	\$54,645	0	\$61,598	1,294,549	949,613
355 Power Generation Equip	\$0	\$706	5.00%	5.00%	\$0	0	(\$706)	0	0
360 Collection Sewers, Force	\$568,413	\$154,483	5.00%	2.00%	\$89,562	0	\$29,127	657,976	183,610
361 Collection Sewers, Gravity	\$3,614,544	\$2,488,740	5.00%	2.00%	\$275,691	0	\$178,239	3,890,235	2,666,979
362 Special Collection Structures	\$0	\$0	5.00%	2.00%	\$0	0	\$0	0	0
363 Services	\$157,218	\$128,612	5.00%	2.00%	\$19,337	0	\$7,927	176,555	136,539
364 Flow Measuring Devices	\$39,829	\$23,004	5.00%	10.00%	(\$8,135)	0	\$1,937	31,694	24,941
365 Flow Measuring Installations	\$156,204	\$3,959	5.00%	10.00%	\$19,404	0	\$8,987	175,608	12,946
370 Receiving Wells	\$696,137	\$199,051	5.00%	3.33%	\$0	0	\$33,838	696,137	232,889
371 Effluent Pumping Equipment	\$453,558	\$244,706	5.00%	12.50%	\$11,119	0	\$25,825	464,677	270,531
380 Treatment & Disposal Equip	\$0	\$0	5.00%	5.00%	\$6,288	0	\$157	6,288	157
381 Plant Sewers	\$123,289	\$84,017	5.00%	5.00%	\$0	0	\$6,164	123,289	90,181
382 Outfall Sewer Lines	\$0	\$0	5.00%	3.33%	\$0	0	\$0	0	0
389 Other Plant & Misc. Equip	\$719,140	\$80,678	5.00%	6.67%	\$91,920	0	\$39,320	811,059	119,998
390 Office Furniture & Fixt	\$220,360	\$27,165	5.00%	6.67%	\$1,465	0	\$11,362	221,825	38,527
391 Transportation Equipment	\$87,811	\$7,642	5.00%	20.00%	\$0	0	\$5,488	87,811	13,130
393 Tools, Shop, & Garage Equip	\$0	\$0	5.00%	5.00%	\$0	0	\$0	0	0
394 Laboratory Equipment	\$7,280	\$352	5.00%	10.00%	\$209	0	\$400	7,488	751
395 Power Operated Equipment	\$0	\$0	5.00%	5.00%	\$0	0	\$0	0	0
396 Communication Equipment	\$0	\$0	5.00%	10.00%	\$0	0	\$0	0	0
398 Other Tangible Plant	\$0	\$0	5.00%	10.00%	\$0	0	\$0	0	0
2004/2005 Totals	\$8,544,987	\$4,331,129			\$561,504	\$0	\$409,663	\$9,106,491	\$4,740,792

PLANT AND ACCUMULATED DEPRECIATION
 With Staff Recommended Plant Adjustments

	2006 Additions Cost	2006 Retirements		Fully Depreciated	2006 Depr. Expense	2006 Total Cost	2006 Accumulated Depreciation	2006 Net Book Value
		Cost	Depreciation					
351 Organization Cost	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
352 Franchise Cost	0	0	0	0	0	0	0	0
353 Land & Land Rights	0	0	0	0	0	461,300	0	461,300
354 Structures & Improvements	3,625	0	0	0	43,169	1,298,174	992,782	305,392
355 Power Generation Equip	0	0	0	0	0	0	0	0
360 Collection Sewers, Force	3,592	0	0	0	13,195	661,568	196,805	464,763
361 Collection Sewers, Gravity	89,849	0	0	0	78,703	3,980,084	2,745,682	1,234,402
362 Special Collection Structures	0	0	0	0	0	0	0	0
363 Services	10,429	0	0	0	3,635	186,984	140,174	46,810
364 Flow Measuring Devices	(182)	0	0	0	3,160	31,512	28,101	3,411
365 Flow Measuring Installations	3,740	0	0	0	17,748	179,348	30,693	148,655
370 Receiving Wells	2,141	0	0	0	23,217	698,278	256,106	442,172
371 Effluent Pumping Equipment	44,676	0	0	0	60,877	509,353	331,408	177,945
380 Treatment & Disposal Equip	12,184	0	0	0	619	18,472	776	17,696
381 Plant Sewers	0	0	0	0	6,164	123,289	96,346	26,943
382 Outfall Sewer Lines	0	0	0	0	0	0	0	0
389 Other Plant & Misc. Equip	52,315	0	0	0	55,842	863,374	175,840	687,534
390 Office Furniture & Fixtures	0	0	0	0	14,796	221,825	53,323	168,502
391 Transportation Equip	0	0	0	0	17,562	87,811	30,692	57,119
393 Tools, Shop, & Garage Equip	0	0	0	0	0	0	0	0
394 Laboratory Equipment	0	0	0	0	749	7,488	1,500	5,988
395 Power Operated Equip	0	0	0	0	0	0	0	0
396 Communication Equipment	0	0	0	0	0	0	0	0
398 Other Tangible Plant	0	0	0	0	0	0	0	0
2006 Totals	\$222,369	\$0	\$0	\$0	\$339,437	\$9,328,860	\$5,080,229	\$4,248,631

PLANT AND ACCUMULATED DEPRECIATION
With Staff Recommended Plant Adjustments

	2007 Additions Cost	2007 Retirements		Fully Depreciated	2007		2007 Total Cost	2007 Accumulated Depreciation	2007 Net Book Value
		Cost	Depreciation		Depr. Expense				
351 Organization Cost	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
352 Franchise Cost	0	0	0	0	0	0	0	0	0
353 Land & Land Rights	0	0	0	0	0	0	461,300	0	461,300
354 Structures & Improvements	(18,852)	0	0	0	42,915	1,279,322	1,035,697	243,625	243,625
355 Power Generation Equip	0	0	0	0	0	0	0	0	0
360 Collection Sewers, Force	32,466	0	0	0	13,556	694,034	210,361	483,673	483,673
361 Collection Sewers, Gravity	178,995	0	0	0	81,392	4,159,079	2,827,073	1,332,006	1,332,006
362 Special Collection Structures	0	0	0	0	0	0	0	0	0
363 Services	0	0	0	0	3,740	186,984	143,914	43,070	43,070
364 Flow Measuring Devices	0	0	0	0	3,151	31,512	31,253	259	259
365 Flow Measuring Installations	0	0	0	0	17,935	179,348	48,628	130,720	130,720
370 Receiving Wells	0	0	0	0	23,253	698,278	279,359	418,919	418,919
371 Effluent Pumping Equipment	69,428	0	0	0	68,008	578,781	399,417	179,364	179,364
380 Treatment & Disposal Equip	4,387	0	0	0	1,033	22,859	1,809	21,050	21,050
381 Plant Sewers	0	0	0	0	6,164	123,289	102,510	20,779	20,779
382 Outfall Sewer Lines	0	0	0	0	0	0	0	0	0
389 Other Plant & Misc. Equip	(158)	0	0	0	57,582	863,216	233,422	629,794	629,794
390 Office Furniture & Fixt	2,763	0	0	0	14,888	224,588	68,211	156,377	156,377
391 Transportation Equip	19,556	0	0	0	19,518	107,367	50,210	57,157	57,157
393 Tools, Shop, & Garage Equip	3,493	0	0	0	87	3,493	87	3,406	3,406
394 Laboratory Equipment	0	0	0	0	749	7,488	2,249	5,239	5,239
395 Power Operated Equip	0	0	0	0	0	0	0	0	0
396 Communication Equipment	0	0	0	0	0	0	0	0	0
398 Other Tangible Plant	0	0	0	0	0	0	0	0	0
2007 Totals	\$292,078	\$0	\$0	\$0	\$353,971	\$9,620,938	\$5,434,200	\$4,186,738	\$4,186,738

PLANT AND ACCUMULATED DEPRECIATION
 With Staff Recommended Plant Adjustments

	2008 Additions Cost	Six Months					2008 Net Book Value
		2008 Retirements		Fully Depreciated	2008		
		Cost	Depreciation		Depr. Expense	Total Cost	
351 Organization Cost	\$0	\$0	\$0	\$0	\$0	\$0	\$0
352 Franchise Cost	0	0	0	0	0	0	0
353 Land & Land Rights	0	0	0	0	461,300	0	461,300
354 Structures & Improvements	1,280,897	0	0	0	31,964	2,560,219	1,067,661
355 Power Generation Equip	0	0	0	0	0	0	0
360 Collection Sewers, Force	13,858	0	0	0	7,010	707,892	217,371
361 Collection Sewers, Gravity	125,870	0	0	0	42,220	4,284,949	2,869,293
362 Special Collection Structures	0	0	0	0	0	0	0
363 Services	11,739	0	0	0	1,929	198,723	145,843
364 Flow Measuring Devices	0	0	0	0	1,576	31,512	32,828
365 Flow Measuring Installations	274	0	0	0	8,974	179,622	57,602
370 Receiving Wells	278,418	21,091	21,091	0	13,769	955,605	272,036
371 Effluent Pumping Equipment	78,867	0	0	0	38,638	657,648	438,055
380 Treatment & Disposal Equip	120,719	0	0	0	2,080	143,578	3,890
381 Plant Sewers	1,238	0	0	0	3,098	124,527	105,608
382 Outfall Sewer Lines	0	0	0	0	0	0	0
389 Other Plant & Misc. Equip	76,216	0	0	0	30,059	939,432	263,481
390 Office Furniture & Fixt	0	0	0	0	7,490	224,588	75,701
391 Transportation Equip	0	0	0	0	10,737	107,367	60,946
393 Tools, Shop, & Garage Equip	2,262	0	0	0	116	5,755	203
394 Laboratory Equipment	0	0	0	0	374	7,488	2,623
395 Power Operated Equip	0	0	0	0	0	0	0
396 Communication Equipment	40,451	0	0	0	1,011	40,451	1,011
398 Other Tangible Plant	0	0	0	0	0	0	0
2008 Totals	\$2,030,809	\$21,091	\$21,091	\$0	\$201,045	\$11,630,656	\$5,614,154
							\$6,016,502

BLACK MOUNTAIN SEWER CORPORATION
Docket No. SW-02361A-08-0609
Test Year Ended June 30, 2008

Schedule CSB-8

RATE BASE ADJUSTMENT NO. 4 - ADVANCES IN AID OF CONSTRUCTION ("AIAC")

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Advances in Aid of Construction	\$ 1,457,009	\$ 276,985	\$ 1,733,994

References:

Column A: Company Schedule B-1, Page 1
Column B: Testimony, CSB, Company Data Request Responses DH 2.4 and 2.5
Column C: Column [A] + Column [B]

RATE BASE ADJUSTMENT NO. 5 - CASH WORKING CAPITAL

		[A]	[B]	[C]	
LINE NO.	DESCRIPTION	COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED	
1	Cash Working Capital	\$ -	\$ (127,713)	\$ (127,713)	
2					
3					
4					
5	Calculation of Cash Working Capital				
6	Description	Amount			
7	Average Expense Lag	43.74	From Line 21		
8	Average Revenue Collection Lag	7.83	See Note 1		
9	Excess Expenses Over Revenue Lag	(35.91)	Line 8 - Line 7		
10	Total Expenses less Depr Exp	\$ 1,298,245	From Line 27		
11	Cash Working Capital Requirement	\$ (127,713)	(Line 9 x Line 10) / 365		
12					
13					
14					
15	Calculation of Average Expense Lag				
16	Description	Lag Days	Amount	Dollar Days	
17	Oper Exp Less Depr	45	\$ 1,243,555	\$ 55,959,976	Lag Days x Amount = Dollar Days
18	Purchased Power	15	\$ 54,690	\$ 820,350	Lag Days x Amount = Dollar Days
19	Total		\$ 1,298,245	\$ 56,780,326	
20					
21	Average Expense Lag	43.74	Total Dollar Days / Total Amount		
22					
23					
24	Summary of Staff Recommended Operating Expenses		Amount		
25	Operating Expenses Less Depr & Pur Pumping Pwr		\$ 1,243,555	From CSB-12 Inc Stmtnt	
26	Purchased Pumping Power		\$ 54,690	From CSB-12 Inc Stmtnt	
27	Subtotal		\$ 1,298,245		
28	Depreciation Expense		\$ 234,859	From CSB-12 Inc Stmtnt	
29	Total Staff Recommended Operating Expenses		\$ 1,533,104	From CSB-12 Inc Stmtnt	
30					
31	Note 1:				
32	Source: Residential Utility Office's ("RUCO") Direct testimony of Marylee Diaz Cortez, CPA,				
33	Schedule MDC-6, Pages 1 and 2 of Docket No. SW-02361A-05-0657.				

References:

Column A: Company Schedule B-1
Column B: Testimony, CSB
Column C: Column [A] + Column [B]

OPERATING INCOME STATEMENT - ADJUSTED TEST YEAR AND STAFF RECOMMENDED

LINE NO.	DESCRIPTION	[A] COMPANY ADJUSTED TEST YEAR AS FILED	[B] STAFF TEST YEAR ADJUSTMENTS	Adj. No.	[C] STAFF TEST YEAR AS ADJUSTED	[D] STAFF PROPOSED CHANGES	[E] STAFF RECOMMENDED
1	REVENUES:						
2	Flat Rate Revenues	\$ 1,557,337	\$ -		\$ 1,557,337	\$ 483,140	\$ 2,040,477
3	Measured Revenues	15,917	-		15,917	-	15,917
4	Other Wastewater Revenues	6,916	-		6,916	-	6,916
5	Intentionally Left Blank	-	-		-	-	-
6	Total Operating Revenues	\$ 1,580,170	\$ -		\$ 1,580,170	\$ 483,140	\$ 2,063,310
7							
8	OPERATING EXPENSES:						
9	Salaries and Wages	\$ -	\$ -		\$ -	\$ -	\$ -
10	Purchased Wastewater Treatment	335,255	-		335,255	-	335,255
11	Sludge Removal Expense	706	-		706	-	706
12	Purchased Power	54,690	-		54,690	-	54,690
13	Fuel for Power Production	928	-		928	-	928
14	Chemicals	37,489	-		37,489	-	37,489
15	Materials & Supplies	11,224	-		11,224	-	11,224
16	Contractual Services, Legal&Engr	9,362	(4,861)	3,4	4,501	-	4,501
17	Contractual Services - Other	553,043	(123,960)	1,2,3,4,9	429,083	-	429,083
18	Contractual Services - Testing	16,955	(2,593)	8	14,362	-	14,362
19	Equipment Rental	1,863	-		1,863	-	1,863
20	Rents - Building	19,830	17,034	6	36,864	-	36,864
21	Transportation	34,445	(5,375)	7	29,070	-	29,070
22	General Liability Insurance	18,704	-		18,704	-	18,704
23	Insurance - Other	990	-		990	-	990
24	Regulatory Commission/Rate Case Expense	60,000	-		60,000	-	60,000
25	Miscellaneous Expense	20,845	-		20,845	-	20,845
26	Bad Debt Expense	11,962	(4,067)	5	7,895	-	7,895
27	Scottsdale Capacity (Operating Lease)	164,522	-		164,522	-	164,522
28	Amort. Of Addit'l Scottsdale Capacity	48,629	-		48,629	-	48,629
29	Depreciation	224,818	10,041	10	234,859	-	234,859
30	Taxes other than Income	(1,780)	1,780	11	-	-	-
31	Property Taxes	32,414	(5,179)	12	27,235	5,665	32,900
32	Income Taxes	7,760	(14,370)	13	(6,610)	178,716	172,106
33	Intentionally Left Blank	-	-		-	-	-
34	Total Operating Expenses	\$ 1,664,654	\$ (131,550)		\$ 1,533,104	\$ 184,381	\$ 1,717,485
35	Operating Income (Loss)	\$ (84,484)	\$ 131,550		\$ 47,066	\$ 298,759	\$ 345,824

References:

Column (A): Company Schedule C-1
Column (B): Schedule MEM-13
Column (C): Column (A) + Column (B)
Column (D): Schedules MEM-1 and MEM-2
Column (E): Column (C) + Column (D)

LINE NO.	DESCRIPTION	[A] COMPANY AS FILED	[B] Corporate Expense Allocation ADJ.#1	[C] Affiliate Increase ADJ.#2	[D] Expensed Plant ADJ.#3	[E] Normalized Maint., Legal & Engr. Expenses ADJ.#4	[F] Bad Debt Expense ADJ.#5	[G] Rents Expense ADJ.#6	[H] Transportation Expense ADJ.#7	[I] Testing Expense ADJ.#8	[J] Bonuses, Meals, and Other Expenses ADJ.#9	[K] Depreciation Expense ADJ.#10	[L] Taxes Other Than Income Exp ADJ.#11	[M] Property Tax Expense ADJ.#12	[N] Income Tax Expense ADJ.#13	[O] STAFF
1	REVENUES:															
2	Flat Rate Revenues	\$1,557,337	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$1,557,337
3	Measured Revenues		-	-	-	-	-	-	-	-	-	-	-	-	-	15,917
4	Other Wastewater Revenues	6,916	-	-	-	-	-	-	-	-	-	-	-	-	-	6,916
5	Intentionally Left Blank															
6	Total Operating Revenues	\$1,580,170	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$1,580,170
7																
8	OPERATING EXPENSES:															
9	Salaries and Wages	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$
10	Purchased Wastewater Tmmt		-	-	-	-	-	-	-	-	-	-	-	-	-	335,255
11	Sludge Removal Expense	706	-	-	-	-	-	-	-	-	-	-	-	-	-	706
12	Purchased Power	54,690	-	-	-	-	-	-	-	-	-	-	-	-	-	54,690
13	Fuel for Power Production	928	-	-	-	-	-	-	-	-	-	-	-	-	-	928
14	Chemicals	37,489	-	-	-	-	-	-	-	-	-	-	-	-	-	37,489
15	Materials & Supplies	11,224	-	-	-	-	-	-	-	-	-	-	-	-	-	11,224
16	Contractual Services, Legal&Eng	9,362	-	(50,302)	(1,500)	(3,361)	-	-	-	-	-	-	-	-	-	4,501
17	Contractual Services - Other	553,043	(24,492)	(50,302)	(7,641)	(26,560)	-	-	-	-	(14,945)	-	-	-	-	429,083
18	Contractual Services - Testing		-	-	-	-	-	-	-	(2,593)	-	-	-	-	-	14,362
19	Equipment Rental	1,863	-	-	-	-	-	-	-	-	-	-	-	-	-	1,863
20	Rents - Building	19,830	-	-	-	-	-	-	-	-	-	-	-	-	-	36,864
21	Transportation	34,445	-	-	-	-	-	17,034	(5,375)	-	-	-	-	-	-	29,070
22	General Liability Insurance	18,704	-	-	-	-	-	-	-	-	-	-	-	-	-	18,704
23	Insurance - Other	990	-	-	-	-	-	-	-	-	-	-	-	-	-	990
24	Reg CommRate Case Expense	60,000	-	-	-	-	-	-	-	-	-	-	-	-	-	60,000
25	Miscellaneous Expense	20,845	-	-	-	-	-	-	-	-	-	-	-	-	-	20,845
26	Bad Debt Expense	11,962	-	-	-	-	(4,067)	-	-	-	-	-	-	-	-	7,895
27	Scottsdale Cap (Operating Lease)	164,522	-	-	-	-	-	-	-	-	-	-	-	-	-	164,522
28	Aditt Scottsdale Capacity Amort	48,629	-	-	-	-	-	-	-	-	-	-	-	-	-	48,629
29	Depreciation	224,818	-	-	-	-	-	-	-	-	-	10,041	-	-	-	234,859
30	Taxes other than Income	(1,780)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	Property Taxes	32,414	-	-	-	-	-	-	-	-	-	-	1,780	(5,179)	-	27,235
32	Income Taxes	7,760	-	-	-	-	-	-	-	-	-	-	-	-	(14,370)	(6,610)
33	Intentionally Left Blank															
34	Total Operating Expenses	\$1,664,654	(24,492)	(50,302)	(9,141)	(29,941)	(4,067)	17,034	(5,375)	(2,593)	(14,945)	10,041	1,780	(5,179)	(14,370)	\$1,533,104
35	Operating Income (Loss)	\$(84,484)	\$24,492	\$50,302	\$9,141	\$29,941	\$4,067	\$(17,034)	\$5,375	\$2,593	\$14,945	\$(10,041)	\$(1,780)	\$5,179	\$14,370	\$47,066

**OPERATING INCOME ADJUSTMENT NO. 1 - EXPENSE ALLOCATIONS
FROM UNREGULATED AFFILIATE**

LINE NO.	DESCRIPTION	[A] COMPANY AS FILED	[B] STAFF ADJUSTMENTS (Col C - Col A)	[C] STAFF AS ADJUSTED
1	Contractual Services - Other	\$ 527,099	\$ -	\$ 527,099
2	Corporate Expense Allocation	25,944	(24,492)	1,452
3	Total Contractual Services - Other	\$ 553,043	\$ (24,492)	\$ 528,551

LINE NO.	[D] Description	[E] Amount	[F] Unallowable Costs (Sch CSB-6, P2)	[G] Direct Costs of Unregulated Affiliate(s)	[H] Allowable Common Costs Allocated to All 78 Companies	[I] Allocation ⁵ %	[J] Costs to be Allocated to Black Mtn (Col I x Col J)
	COSTS TO BE ALLOCATED TO BLACK MOUNTAIN						
13	Rent	\$ 430,739	\$ -	\$ (430,739)	\$ -	1.28%	\$ -
14	Audit ¹	\$ 507,000	\$ -	\$ (456,300)	\$ 50,700	1.28%	\$ 650.00
15	Tax Services ²	\$ 265,000	\$ -	\$ (238,500)	\$ 26,500	1.28%	\$ 339.74
16	Legal-General ³	\$ 300,000	\$ -	\$ (284,400)	\$ 15,600	1.28%	\$ 200.00
17	Other Professional Services	\$ 455,000	\$ -	\$ (455,000)	\$ -	1.28%	\$ -
18	Management Fee	\$ 636,619	\$ -	\$ (636,619)	\$ -	1.28%	\$ -
19	Unit Holder Communications	\$ 314,100	\$ -	\$ (314,100)	\$ -	1.28%	\$ -
20	Trustee Fees	\$ 204,000	\$ -	\$ (204,000)	\$ -	1.28%	\$ -
21	Office Costs	\$ 254,100	\$ (46,186)	\$ (207,914)	\$ -	1.28%	\$ -
22	Licenses/Fees and Permits	\$ 305,000	\$ (145,642)	\$ (159,358)	\$ -	1.28%	\$ -
23	Escrow and Transfer Fees	\$ 75,000	\$ -	\$ (75,000)	\$ -	1.28%	\$ -
24	Depreciation Expense ⁴	\$ 204,242	\$ -	\$ (183,818)	\$ 20,424	1.28%	\$ 261.85
25		\$ 3,950,800	\$ (191,828)	\$ (3,645,748)	\$ 113,224		\$ 1,451.59

- 28 Foot Note 1: Audit - As the parent company's lenders require the APIF to have annual financial audits, Staff assigned the majority of the cost (i.e., 90 percent) to APIF and the remaining 10 percent to its 78 companies/interests.
- 31 Foot Note 2: Tax Services - Given the tax complexity of the APIF's many holdings and transactions, Staff assigned the majority of the cost (i.e., 90 percent) to APIF and the remaining 10 percent to its 78 companies/interests.
- 34 Foot Note 3: Legal, General - Staff reviewed the legal invoices and found that the very large majority of the legal invoices pertained to the APIF. Staff identified only one invoice that specifically related to Black Mountain. The cost indicated on the invoice that was directly related to Black Mountain was approximately \$200.
- 38 Foot Note 4: Depreciation Expense - Given that most of APIF's plant costs benefit primarily APIF, Staff assigned the majority of the cost (i.e., 90 percent) to APIF and the remaining 10 percent to its 78 companies/interests.
- 41 Foot Note 5: Allocation Percentage - Calculated as follows: 1 / 78 companies = 1.28%. The 78 companies represents the average of the year-end 2006, 85 companies, and year-end 2007, 71 companies.

References:

- Column A: Company Schedule E-5
Column B: Testimony, CSB, Company Data Request Responses CSB 1.45
Column C: Column [A] + Column [B]

LINE NO.		Description of Unallowable Cost	Amount
1	Category		
2	Office Fees and Expenses	Wind Analysis & Planning Software	\$15,056
3	Office Fees and Expenses	Gold Watches and Clocks	\$16,864
4	Office Fees and Expenses	Pilsner Beer Glasses	\$5,700
5	Office Fees and Expenses	Leafs-Raptors Season Tickets	\$5,066
6	Office Fees and Expenses	Super Bowl XLII Tickets	\$3,500
7		Subtotal for Office Expenses	\$46,186
8			
9	Licenses and Fees	Donation - Wind Project Develop	\$25,000
10	Licenses and Fees	Donation - Water Project in Africa	\$25,000
11	Licenses and Fees	Donation - Cancer Society	\$13,350
12	Licenses and Fees	Donation - Multiple Myeloma	\$5,000
13	Licenses and Fees	Wind Development	\$7,887
14	Licenses and Fees	U.S. Trustee	\$9,375
15	Licenses and Fees	St. Leon Wind Energy	\$12,556
16	Licenses and Fees	Algonquin Power Fund Inc Taxes	\$6,891
17	Licenses and Fees	Algonquin Power Fund Inc Taxes	\$6,794
18	Licenses and Fees	Tax Ruling Request for KMS America & Subs	\$10,000
19	Licenses and Fees	Algonquin Power Fund Inc Taxes	\$23,789
20		Subtotal for Licenses & Fees	\$145,642

OPERATING INCOME ADJUSTMENT NO. 2 - AFFILIATE INCREASE

LINE NO.	DESCRIPTION	[A] COMPANY AS FILED	[B] STAFF ADJUSTMENTS (Col C - Col A)	[C] STAFF AS ADJUSTED
1	Contractual Services - Other	\$ 452,439	\$ -	\$ 452,439
2	Affiliate Increase	50,302	(50,302)	-
3	Total Contractual Services - Other	\$ 502,741	\$ (50,302)	\$ 452,439
4				
5				
6				

References:

Column A: Company Schedule C-2, Page 1, Adjustment No. 11

Column B: Testimony, CSB; Company Data Request Responses to MEM 1.28, CSB 9.5, 9.6, 9.8

Column C: Column [A] + Column [B]

OPERATING INCOME ADJUSTMENT NO. 3 - EXPENSED PLANT

		[A]	[B]	[C]
LINE NO.	Description	COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED (Col A + Col B)
1	Contractual Services, Legal and Engineering Exp	\$ 9,362	\$ (1,500)	\$ 7,862
2	Contractual Services, Other Expense	\$ 553,043	\$ (7,641)	\$ 545,402
3		\$ -		
4		\$ -		
5		\$ -		
6	Total	\$ 562,405	\$ (9,141)	\$ 553,264
7				
8				
9	PLANT COSTS REMOVED FROM CONTRACTUAL SERVICES, LEGAL & ENGINEERING EXPENSE (MEM 1.55)			
10	Acct. No.	Vendor Name	Description	Amount
11	354 - Structures & Improv	Consulting Land Surveyors	Locate existing and set new boundaries	\$ 1,500.00
12				
13				
14	PLANT COSTS REMOVED FROM CONTRACTUAL SERVICES, OTHER EXPENSE (MEM 1.55)			
15	Acct. No.	Vendor Name	Description	Amount
16	354 - Structures & Improv	Consulting Land Surveyors	Locate existing and set new boundaries	\$ 800.00
17				
18				
19	360-Collection Svcs, Force	ADEQ Approval to Construct	Certificate	\$ 1,600.00
20	370-Receiving Wells	ADEQ Approval to Construct	Certificate	\$ 1,200.00
21			Subtotal	\$ 2,800.00
22				
23	371-Effluent Pumping Plant	Keller Equipment Company	Install submersible Pumps	\$ 1,212.00
24	371-Effluent Pumping Plant	Keller Equipment Company	Set two pumps; pull one	\$ 1,591.25
25			Subtotal	\$ 2,803.25
26				
27				
28	381-Plant Sewers	KSK Electric	New cables, sand filters	\$ 1,237.72
29				
30			Total for Contractual Services, Other	\$ 7,640.97
31				
32			Grand Total	\$ 9,140.97

References:

Column A: Company Schedule B-2, Page 3
Column B: Testimony, CSB, Company Data Request Responses MEM 1.55
Column C: Column [A] + Column [B]

OPERATING INCOME ADJUSTMENT NO. 4 - NORMALIZED MAINTENANCE, LEGAL, & ENGINEERING EXPENSES

LINE NO.		[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Contractual Services - Other	\$ 462,871	\$ (26,580)	\$ 489,451
2	Contractual Services, Legal and Engr.	9,362	(3,361)	9,362
3		<u>\$ 472,233</u>	<u>\$ (29,941)</u>	<u>\$ 498,813</u>
4				
5				
6				[D]
7				Normalized
8				Maintenance Expense
9				(MEM 1.55)
10			Cost of Sewer Spill	\$ 39,870
11			Divided by 3 Years	3
12			Normalized Cost for Sewer Spill	<u>\$ 13,290</u>
13			Normalized Cost for Sewer Spill	\$ 13,290
14			Less: Cost for Sewer Spill	<u>\$ 39,870</u>
15			Staff's Adjustment	(26,580)
16				
17				
18				
19	[E]	[F]	[G]	[H]
20	Year	Contractual Services	Land Surveying	Normalized
21	Company Schedule E-2	Legal & Engr	Costs Capitalized	Legal & Engr. Exp
22			(Sch CSB-14)	(Col E + Col F)
23	6/30/2006	\$ 5,503	\$ -	\$ 5,503
24	6/30/2007	\$ 4,639	\$ -	\$ 4,639
25	6/30/2008	\$ 9,362	\$ (1,500)	\$ 7,862
26				<u>\$ 18,004</u>
27			Divided by 3 Years	3
28			Normalized Legal and Engineering Expense	<u>\$ 6,001</u>
29				
30			Normalized Legal and Engineering Expense	\$ 6,001
31			Less: Legal and Engineering Expense	<u>\$ 9,362</u>
32			Staff's Adjustment	(3,361)

References:

Column A: Company Schedule C-1

Column B: Testimony, CSB, Company Data Request Response MEM 1.55, Company Schedule E-2

Column C: Column [A] + Column [B]

OPERATING INCOME ADJUSTMENT NO. 5 - BAD DEBT EXPENSE

LINE NO.		[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Bad Debt Expense - Test Year	\$ 7,898	\$ -	\$ 7,898
2	Bad Debt Expense Not Incurred in Test Year	\$ 4,067	\$ (4,067)	\$ -
3	Total Bad Debt Expense	\$ 11,965	\$ (4,067)	\$ 7,898
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				

	[D]	[E]
	Year	Bad Debt Expense
	6/30/2006	\$ 2,240
	6/30/2007	\$ 1,757
	Amount to Reconcile G/L to Actual Write-offs	\$ 70
	Bad Debt Expense Not Incurred in Test Year	\$ 4,067
	6/30/2008	\$ 7,898
	Bad Debt Expense per Company	\$ 11,965

References:

- Column A: Company Schedule C-1
- Column B: Testimony, CSB, Company Schedule E-2
- Column C: Column [A] + Column [B]

		[A]	[B]	[C]
LINE NO.		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Rents, Building (1/1/2008 to 6/30/2008)	\$ 19,830	\$ -	\$ 19,830
2	Annualization Adjustment	-	17,034	17,034
3	Total Contractural Services - Other	\$ 19,830	\$ 17,034	\$ 36,864
4				
5				
6				
7				
8				[D]
9				Rents, Building
10				Expense
11				(CSB 10.11)
12			Office Rent	\$ 2,368
13			Utilities	600
14			Taxes	104
15			Total	\$ 3,072
16			Multiplied by 12 months	12
17				\$ 36,864
18	Test Year Rents, Building Expense			\$ 19,830
	Annualization Adjustment			\$ 17,034

Column A: Company Schedule C-1
Column B: Testimony, CSB, Company Data Request Response CSB 10.11
Column C: Column [A] + Column [B]

OPERATING INCOME ADJUSTMENT NO. 7 - TRANSPORTATION EXPENSE

LINE NO.		[A]		[B]		[C]	
		COMPANY AS FILED		STAFF ADJUSTMENTS		STAFF AS ADJUSTED	
1	Transportation Expense	\$	23,695	\$	-	\$	23,695
2	2007 Chevrolet Silverado Lease Cost		10,750		(5,375)		5,375
3	Total Contractual Services - Other	\$	34,445	\$	(5,375)	\$	29,070
4							
5							
6							
7							
8							
9							
10							
11	Annual Lease Expense for 2007	\$	10,750				
12	Multiplied by		50.00%	Split Between Black Mtn and Litchfield Park			
13	Black Mountain's Allocated Costs	\$	5,375				
14							
15							

References:

Column A: Company Schedule C-1
Column B: Testimony, CSB, Company Data Request Response MEM 1.55 and CSB 10.4
Column C: Column [A] + Column [B]

BLACK MOUNTAIN SEWER CORPORATION
Docket No. SW-02361A-08-0609
Test Year Ended June 30, 2008

Schedule CSB-19

OPERATING INCOME ADJUSTMENT NO. 8 - TESTING EXPENSE

LINE NO.	DESCRIPTION	[A] COMPANY PROPOSED	[B] STAFF ADJUSTMENTS	[C] STAFF RECOMMENDED
1	Testing Expense	\$ 16,955	\$ (2,593)	\$ 14,362

References:

Column A: Company Schedule C-1

Column B: Testimony, CSB, Staff Engineering Report Executive Summary

Column C: Column [A] + Column [B]

OPERATING INCOME ADJUSTMENT NO. 9 - BONUSES, MEALS, & OTHER EXPENSES

LINE NO.		[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Contractual Services - Other	\$ 487,796	\$ -	\$ 487,796
2	Bonuses, Meals, Beverages, Etc.	14,945	(14,945)	-
3	Total Contractual Services - Other	\$ 502,741	\$ (14,945)	\$ 487,796
4				
5				
6				
7	Bonuses	\$	13,460	MEM 1.24
8	Meals		526	CSB 10.3
9	Beverages		907	MEM 1.55
10	Charitable Contributions		52	MEM 1.46
11			\$ 14,945	

References:

Column A: Company Schedule C-1

Column B: Testimony, CSB, Company Data Request Response MEM 1.24,1.46,1.55, CSB 10.3

Column C: Column [A] + Column [B]

OPERATING INCOME ADJUSTMENT NO. 10 - DEPRECIATION EXPENSE ON TEST YEAR PLANT

LINE NO.	ACCT NO.	DESCRIPTION	[A] PLANT in SERVICE Per Staff	[B] NonDepreciable or Fully Depreciated PLANT	[C] DEPRECIABLE PLANT (Col A - Col B)	[D] DEPRECIATION RATE	[E] DEPRECIATION EXPENSE (Col C x Col D)
1	351	Organization	\$ -	\$ -	\$ -	0.00%	\$ -
2	352	Franchises	\$ -	\$ -	\$ -	0.00%	\$ -
3	353	Land and Land Rights	\$ 461,300	\$ 461,300	\$ -	0.00%	\$ -
4	354	Structures and Improvements	\$ 2,560,220	\$ -	\$ 2,560,220	3.33%	\$ 85,255
5	355	Power Generation Equipment	\$ -	\$ -	\$ -	5.00%	\$ -
6	360	Collection Services - Force	\$ 707,892	\$ -	\$ 707,892	2.00%	\$ 14,158
7	361	Collection Services - Gravity	\$ 4,284,948	\$ -	\$ 4,284,948	2.00%	\$ 85,699
8	362	Special Collecting Structures	\$ -	\$ -	\$ -	2.00%	\$ -
9	363	Services to Customers	\$ 198,723	\$ -	\$ 198,723	2.00%	\$ 3,974
10	364	Flow Measuring Devices	\$ 31,512	\$ -	\$ 31,512	10.00%	\$ 3,151
11	365	Flow Measuring Installations	\$ 179,622	\$ -	\$ 179,622	10.00%	\$ 17,962
12	370	Receiving Wells	\$ 955,605	\$ -	\$ 955,605	3.33%	\$ 31,822
13	371	Effluent Pumping Equipment	\$ 657,647	\$ -	\$ 657,647	12.50%	\$ 82,206
14	380	Treatment and Disposal Equipment	\$ 143,578	\$ -	\$ 143,578	5.00%	\$ 7,179
15	381	Plant Sewers	\$ 124,527	\$ -	\$ 124,527	5.00%	\$ 6,226
16	382	Outfall Sewer Lines	\$ -	\$ -	\$ -	3.33%	\$ -
17	389	Other Plant & Misc. Equipment	\$ 939,432	\$ -	\$ 939,432	6.67%	\$ 62,660
18	390	Office Furniture & Equipment	\$ 224,587	\$ -	\$ 224,587	6.67%	\$ 14,980
19	391	Transportation Equipment	\$ 107,367	\$ -	\$ 107,367	20.00%	\$ 21,473
20	393	Tools, Shop & Garage Equipment	\$ 5,754	\$ -	\$ 5,754	5.00%	\$ 288
21	394	Laboratory Equipment	\$ 7,488	\$ -	\$ 7,488	10.00%	\$ 749
22	395	Power Operated Equipment	\$ -	\$ -	\$ -	5.00%	\$ -
23	396	Communication Equipment	\$ 40,451	\$ -	\$ 40,451	10.00%	\$ 4,045
24	398	Other Tangible Plant	\$ -	\$ -	\$ -	10.00%	\$ -
25		Total Plant	\$ 11,630,653	\$ 461,300	\$ 11,169,353		\$ 441,828
26							
27		Composite Depreciation Rate (Depr Exp / Depreciable Plant):	3.96%				
28		CIAC: \$	5,232,139				
29		Amortization of CIAC (Line 25 x Line 26): \$	206,969				
30							
31		Depreciation Expense Before Amortization of CIAC: \$	441,828				
32		Less Amortization of CIAC: \$	206,969				
33		Test Year Depreciation Expense - Staff: \$	234,859				
34		Depreciation Expense - Company: \$	224,818				
35		Staff's Total Adjustment: \$	10,041				

References:

Column [A]: Schedule CSB-4
Column [B]: From Column [A]
Column [C]: Column [A] - Column [B]
Column [D]: Engineering Staff Report
Column [E]: Column [C] x Column [D]

BLACK MOUNTAIN SEWER CORPORATION
Docket No. SW-02361A-08-0609
Test Year Ended June 30, 2008

Schedule CSB-22

OPERATING INCOME ADJUSTMENT NO. 11 - TAXES OTHER THAN INCOME

LINE		[A] COMPANY	[B] STAFF	[C] STAFF
<u>NO.</u>	<u>DESCRIPTION</u>	<u>PROPOSED</u>	<u>ADJUSTMENTS</u>	<u>RECOMMENDED</u>
1	Taxes Other Than Income	<u>\$ (1,780)</u>	<u>\$ 1,780</u>	<u>\$ -</u>

References:

Col [A]: Company Schedule C-2

Col [B]: Col [C] - Col [A]

Col [C]: CSB Testimony; Company Data Request Response to MEM 1.58

BLACK MOUNTAIN SEWER CORPORATION
Docket No. SW-02361A-08-0609
Test Year Ended June 30, 2008

Schedule CSB-23

OPERATING INCOME ADJUSTMENT #12 - Property Tax Expense

LINE NO.	Property Tax Calculation	STAFF AS ADJUSTED	STAFF RECOMMENDED
1	Staff Adjusted Test Year Revenues	\$ 1,580,170	\$ 1,580,170
2	Weight Factor	2	2
3	Subtotal (Line 1 * Line 2)	3,160,340	\$ 3,160,340
4	Staff Recommended Revenue, Per Schedule CSB-1	1,580,170	\$ 2,063,310
5	Subtotal (Line 4 + Line 5)	4,740,510	5,223,650
6	Number of Years	3	3
7	Three Year Average (Line 5 / Line 6)	1,580,170	\$ 1,741,217
8	Department of Revenue Multiplier	2	2
9	Revenue Base Value (Line 7 * Line 8)	3,160,340	\$ 3,482,433
10	Plus: 10% of CWIP -	14,202	14,202
11	Less: Net Book Value of Licensed Vehicles	46,420	\$ 46,420
12	Full Cash Value (Line 9 + Line 10 - Line 11)	3,128,122	\$ 3,450,215
13	Assessment Ratio	21.0%	23.0%
14	Assessment Value (Line 12 * Line 13)	656,906	\$ 793,549
15	Composite Property Tax Rate (Per Company Schedule C-2, Page 2)	4.1459%	4.1459%
			\$ -
16	Staff Test Year Adjusted Property Tax (Line 14 * Line 15)	\$ 27,235	
17	Company Proposed Property Tax	32,414	
18	Staff Test Year Adjustment (Line 16-Line 17)	\$ (5,179)	
19	Property Tax - Staff Recommended Revenue (Line 14 * Line 15)		\$ 32,900
20	Staff Test Year Adjusted Property Tax Expense (Line 16)		\$ 27,235
21	Increase in Property Tax Expense Due to Increase in Revenue Requirement		\$ 5,665
22	Increase to Property Tax Expense		\$ 5,665
23	Increase in Revenue Requirement		483,140
24	Increase to Property Tax per Dollar Increase in Revenue (Line 19/Line 20)		1.172563%

OPERATING INCOME ADJUSTMENT NO. 13 - TEST YEAR INCOME TAXES

LINE
NO.

DESCRIPTION

		Test Year
<u>Calculation of Income Tax:</u>		
1	Revenue (Schedule CSB-11)	\$ 1,580,170
2	Operating Expenses Excluding Income Taxes	\$ 1,539,714
3	Synchronized Interest (L17)	\$ 72,047
4	Arizona Taxable Income (L1 - L2 - L3)	\$ (31,591)
5	Arizona State Income Tax Rate	6.9680%
6	Arizona Income Tax (L4 x L5)	\$ (2,201)
7	Federal Taxable Income (L4 - L6)	\$ (29,389)
8	Federal Tax on First Income Bracket (\$1 - \$50,000) @ 15%	\$ (4,408)
9	Federal Tax on Second Income Bracket (\$51,001 - \$75,000) @ 25%	\$ -
10	Federal Tax on Third Income Bracket (\$75,001 - \$100,000) @ 34%	\$ -
11	Federal Tax on Fourth Income Bracket (\$100,001 - \$335,000) @ 39%	\$ -
12	Federal Tax on Fifth Income Bracket (\$335,001 - \$10,000,000) @ 34%	\$ -
13	Total Federal Income Tax	\$ (4,408)
14	Combined Federal and State Income Tax (L44 + L51)	\$ (6,610)

<u>Calculation of Interest Synchronization:</u>		
15	Rate Base (Schedule CSB-13, Col. (C), Line 16)	\$ 3,602,336
16	Weighted Average Cost of Debt	2.00%
17	Synchronized Interest (L16 x L17)	\$ 72,047

18	Income Tax - Per Staff	\$ (6,610)
19	Income Tax - Per Company	\$ 7,760
20	Staff Adjustment	\$ (14,370)

RATE DESIGN

	Present Rates	Company Proposed	Staff Recommended
Residential Service-Per Month	\$45.64	\$ 71.08	\$59.80
Commercial, Regular¹	\$ 0.18298	\$ 0.28499	\$ 0.23974

Commercial - Special Rate	Present Rates			Company Proposed		Staff Recommended	
	Gallons Per Day	Monthly Billing	Rate Per Gallon	Monthly Billing	Rate Per Gallon	Monthly Billing	Rate Per Gallon
Name of Business							
BH Enterprises-West	2,525	\$354.36	\$0.14034	N/A	N/A	*	*
BH Enterprises-East	1,400	\$196.48	\$0.14034	N/A	N/A	*	*
Barb's Pet Grooming	250	\$35.09	\$0.14034	N/A	N/A	*	*
Boulder's Resort	29,345	\$4,173.74	\$0.14223	\$8,363.03	\$ 0.28499	\$5,468.42	\$0.18635
Carefree Dental	1,625	\$228.05	\$0.14034	N/A	N/A	*	*
Ridgecrest Realty	450	\$63.87	\$0.14193	N/A	N/A	*	*
Desert Forest	7,000	\$1,144.08	\$0.16344	\$1,994.93	\$ 0.28499	\$1,498.97	\$0.21414
Desert Hills Pharmacy	800	\$136.49	\$0.17061	N/A	N/A	*	*
El Pedregal	15,787	\$2,215.55	\$0.14034	\$4,499.14	\$ 0.28499	\$2,902.81	\$0.18387
Lemon Tree	300	\$41.07	\$0.13691	N/A	N/A	*	*
Body Shop	1,000	\$176.47	\$0.17647	N/A	N/A	*	*
Spanish Village	4,985	\$699.59	\$0.14034	\$1,420.68	\$ 0.28499	\$916.61	\$0.18387
Boulder's Club	1,200	\$168.41	\$0.14034	\$341.99	\$ 0.28499	\$341.99	\$0.18387
Anthony Vuitaggio	300	\$46.79	\$0.15597	N/A	N/A	*	*

Effluent Sales	Effluent Sales		
	Present Rates	Company Proposed	Staff Recommended
Per thousand gallons	\$0.374400	\$0.460510	\$0.490538
Per Acre Feet	\$122.00	\$150.00	

	Present Rates	Company Proposed	Staff Recommended
Service Charges:			
Establishment	\$ 25.00	\$ 25.00	\$ 25.00
Re-establishment	\$ 25.00	\$ 25.00	\$ 25.00
Re-connection	No Charge	No Charge	No Charge
Minimum Deposit (Residential)	(a)	(a)	(a)
Minimum Deposit (Non-Residential)	(a)	(a)	(a)
Deposit Interest	(a)	(a)	6.00%
NSF Check Charge	\$ 10.00	\$ 10.00	\$ 10.00
Deferred Paymnt Finance Charge	1.50%	1.50%	1.50%
Late Charge	1.50%	1.50%	1.50%

Main Extension Tariff	Cost	Cost (b)	Cost
Hook-Up Fee for New Service ¹	\$ 6.47	\$ 6.47	N/A

¹ Per Gallon per Day. Wastewater flows are based on Engineering Bulletin 12, Table 1 published by ADEQ.

(a) Per A.A.C. R14-2-603B: Residential - two times average bill, Non-residential - two and one-half times average bill

(b) Per A.A.C. R14-2-606B

N/A Not included in current or proposed tariff.

* Staff recommends that this rate be removed from the tariff.

BEFORE THE ARIZONA CORPORATION COMMISSION

KRISTIN K. MAYES

Chairman

GARY PIERCE

Commissioner

SANDRA D. KENNEDY

Commissioner

PAUL NEWMAN

Commissioner

BOB STUMP

Commissioner

IN THE MATTER OF THE APPLICATION OF)
BLACK MOUNTAIN SEWER CORPORATION,)
AN ARIZONA CORPORATION, FOR A)
DETERMINATION OF THE FAIR VALUE OF)
ITS UTILITY PLANT AND PROPERTY AND)
FOR INCREASES IN ITS RATES AND)
CHARGES FOR UTILITY SERVICE BASED)
THEREON)

DOCKET NO. SW-02361A-08-0609

DIRECT

TESTIMONY

OF

JUAN C. MANRIQUE

PUBLIC UTILITIES ANALYST I

UTILITIES DIVISION

ARIZONA CORPORATION COMMISSION

SEPTEMBER 21, 2009

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**EXECUTIVE SUMMARY
BLACK MOUNTAIN SEWER CORPORATION
DOCKET NO. SW-02361A-08-0609**

The Direct Testimony of Staff witness Juan C. Manrique addresses the following issues:

Capital Structure – Staff recommends that the Commission adopt a capital structure for Black Mountain Sewer Corporation (“Applicant”) for this proceeding consisting of 0.0 percent debt and 100.0 percent equity. Although the Applicant has debt in the form of capital leases, the Commission has directed (Decision Nos. 59944) recovery of the lease costs as operating expense.

Cost of Equity – Staff recommends that the Commission adopt a 9.6 percent return on equity (“ROE”) for the Applicant. Staff’s estimated ROE for the Applicant is based on cost of equity estimates for the sample companies ranging from 9.8 percent for the capital asset pricing model (“CAPM”) to 10.7 percent for the discounted cash flow method (“DCF”). Staff’s ROE recommendation includes a 0.7 percent downward adjustment to reflect a lower financial risk in the Applicant’s capital structure compared to that of the sample companies.

Overall Rate of Return – Staff recommends that the Commission adopt an overall rate of return (“ROR”) of 9.6 percent, i.e. the ROE, since the recommended capital structure includes no debt.

Mr. Bourassa’s Testimony – The Commission should reject the Company-proposed 12.8 percent ROE for the following reasons:

Mr. Bourassa’s DCF estimates rely exclusively on analysts’ forecasts. In addition Mr. Bourassa’s DCF constant-growth analysis does not include dividend growth.

I. INTRODUCTION

Q. Please state your name, occupation, and business address.

A. My name is Juan C. Manrique. I am a Public Utilities Analyst employed by the Arizona Corporation Commission ("ACC" or "Commission") in the Utilities Division ("Staff"). My business address is 1200 West Washington Street, Phoenix, Arizona 85007.

Q. Briefly describe your responsibilities as a Public Utilities Analyst.

A. In my position as a Public Utilities Analyst, I perform studies to estimate the cost of capital component in rate filings to determine the overall revenue requirement and analyze requests for financing authorizations.

Q. Please describe your educational background and professional experience.

A. I graduated from Arizona State University and received a Bachelor of Science degree in Finance. My course of studies included courses in corporate and international finance, investments, accounting, statistics, and economics. I began employment as a Staff Public Utilities Analyst in October 2008. My professional experience includes two years as a Loan Officer with a homebuilder and as an Associate for an Investor Relations firm.

Q. What is the scope of your testimony in this case?

A. My testimony provides Staff's recommended capital structure, return on equity ("ROE") and overall rate of return ("ROR") for establishing the revenue requirement for Black Mountain Sewer Corporation ("Black Mountain" or "Applicant").

Q. Please provide a brief description of Black Mountain and its relation to affiliates.

A. Black Mountain is a Subchapter "C" corporation. Black Mountain is owned by Algonquin Water Resources of America, Inc. ("AWRA"). AWRA is an indirect wholly owned

1 subsidiary of Algonquin Power Income Fund which is publicly traded on the Toronto
2 Stock Exchange. Black Mountain is a sister company to other public service corporations
3 regulated by the Commission including: Bella Vista Water Company, Litchfield Park
4 Service Company, Northern Sunrise Water Company, Southern Sunrise Water Company
5 and Gold Canyon Sewer Company.

6
7 *Summary of Testimony and Recommendations*

8 **Q. Briefly summarize how Staff's cost of capital testimony is organized.**

9 A. Staff's cost of capital testimony is presented in ten sections. Section I is this introduction.
10 Section II discusses the concept of weighted average cost of capital ("WACC"). Section
11 III presents the concept of capital structure and presents Staff's recommended capital
12 structure for Black Mountain in this proceeding. Section IV discusses the concepts of
13 ROE and risk. Section V presents the methods employed by Staff to estimate Black
14 Mountain's ROE. Section VI presents the findings of Staff's ROE analysis. Section VII
15 presents Staff's final cost of equity estimates for Black Mountain. Section VIII presents
16 Staff's ROR recommendation. Section IX presents Staff's comments on the Direct
17 Testimony of the Applicant's witness, Mr. Thomas J. Bourassa. Finally, Section X
18 presents the conclusions.

19
20 **Q. Have you prepared any exhibits to accompany your testimony?**

21 A. Yes. I prepared eight schedules (JCM-1 to JCM-8) that support Staff's cost of capital
22 analysis.

23
24 **Q. What is Staff's recommended rate of return for Black Mountain?**

25 A. Staff recommends a 9.6 percent overall ROR as shown in Schedule JCM-1. Staff's ROR
26 recommendation is based on cost of equity estimates for Black Mountain that range from

10.7 percent using the capital asset pricing model ("CAPM") to 9.8 percent using the discounted cash flow method ("DCF"). Staff's ROR recommendation reflects a 0.7 percent downward adjustment to the estimated ROE to account for a lower financial risk in the Applicant's capital structure compared to that of the sample companies.

Black Mountain's Proposed Overall Rate of Return

Q. Briefly summarize Black Mountain's proposed capital structure, cost of debt, return on equity and overall rate of return for this proceeding.

A. Table 1 summarizes the Applicant's proposed capital structure, cost of debt, return on equity and overall rate of return in this proceeding:

Table 1

	Weight	Cost	Weighted Cost
Long-term Debt	0.0%	0.0%	0.0%
Common Equity	100.0%	12.8%	<u>12.8%</u>
Cost of Capital/ROR			12.8%

Black Mountain is proposing an overall rate of return of 12.8 percent.

II. THE WEIGHTED AVERAGE COST OF CAPITAL

Q. Briefly explain the cost of capital concept.

A. The cost of capital is the opportunity cost of choosing one investment over others with equivalent risk. In other words, the cost of capital is the return that stakeholders expect for investing their financial resources in a determined business venture over another business venture.

1 **Q. What is the overall cost of capital?**

2 A. The cost of capital to a company issuing a variety of securities (i.e., stock and
3 indebtedness) is an average of the cost rates on all issued securities adjusted to reflect the
4 relative amounts for each security in the company's entire capital structure. Thus, the
5 overall cost of capital is the WACC.

6
7 **Q. How is the WACC calculated?**

8 A. The WACC is calculated by adding the weighted expected returns of a firm's securities.
9 The WACC formula is:

10 Equation 1.

11
12
$$\text{WACC} = \sum_{i=1}^n W_i * r_i$$

13

14 In this equation, W_i is the weight given to the i^{th} security (the proportion of the i^{th} security
15 relative to the portfolio) and r_i is the expected return on the i^{th} security.

16
17 **Q. Can you provide an example demonstrating application of Equation 1?**

18 A. Yes. For this example, assume that an entity has a capital structure composed of 60
19 percent debt and 40 percent equity. Also, assume that the embedded cost of debt is 6.0
20 percent and the expected return on equity, i.e. the cost of equity, is 10.5 percent.
21 Calculation of the WACC is as follows:

22
$$\text{WACC} = (60\% * 6.0\%) + (40\% * 10.5\%)$$

23
$$\text{WACC} = 3.60\% + 4.20\%$$

24
$$\text{WACC} = 7.80\%$$

25

1 The weighted average cost of capital in this example is 7.80 percent. The entity in this
2 example would need to earn an overall rate of return of 7.80 percent to cover its cost of
3 capital.

4
5 **III. CAPITAL STRUCTURE**

6 *Background*

7 **Q. Please explain the capital structure concept.**

8 A. The capital structure of a firm consists of the relative proportions of each type of security--
9 short-term debt, long-term debt (including capital leases), preferred stock and common
10 stock-- that are used to finance the firm's assets.

11
12 **Q. How is the capital structure expressed?**

13 A. The capital structure of a company is expressed as the percentage of each component of
14 the capital structure (capital leases, short-term debt, long-term debt, preferred stock and
15 common stock) relative to the entire capital structure.

16
17 As an example, the capital structure for an entity that is financed by \$20,000 of capital
18 leases, \$85,000 of long-term debt, \$15,000 of preferred stock and \$40,000 of common
19 stock is shown in Table 2.

20

Table 2

Component			%
Capital Leases	\$20,000	(\$20,000/\$200,000)	10.0%
Long-Term Debt	\$85,000	(\$85,000/\$200,000)	42.5%
Preferred Stock	\$15,000	(\$15,000/\$200,000)	7.5%
Common Stock	\$80,000	(\$80,000/\$200,000)	40.0%
Total	\$200,000		100%

The capital structure in this example is composed of 0.0 percent short-term debt, 10.0 percent capital leases, 42.5 percent long-term debt, 7.5 percent preferred stock and 40.0 percent common stock.

Black Mountain's Capital Structure

Q. What capital structure does Black Mountain propose?

A. The Applicant proposes a capital structure composed of 0.0 percent debt and 100.0 percent common equity.

Q. What is Staff's proposed capital structure for Black Mountain?

A. Staff recommends a capital structure composed of 0.0 percent debt and 100.0 percent equity.

Q. Is this Black Mountain's actual capital structure?

A. No. The Company's actual capital structure is 21.6 percent debt and 78.4 percent equity. The Company has two operating leases that funded its Scottsdale treatment capacity which would normally be considered debt. However, Decision No. 59944, dated December 26, 1996, states that these leases shall be considered as lease expense, i.e., not as debt.

1 **Q. How does Black Mountain's capital structure compare to capital structures of**
2 **publicly traded water utilities?**

3 A. The Applicant's capital structure is composed of 0.0 percent debt and 100.0 percent
4 equity. Schedule JCM-4 shows the capital structures of six publicly traded water
5 companies ("sample water companies") as of July 2009. The average capital structure for
6 the sample water utilities is comprised of approximately 50.2 percent debt and 49.8
7 percent equity.

8
9 **Q. Do you have additional comments on Black Mountain's capital structure?**

10 A. Yes. Black Mountain has two inter-company loans. However, Commission Decision No.
11 59944 specifies that the debt service cost for these loans is to be treated as an operating
12 expense. Therefore, Staff did not include these loans in the Applicant's capital structure.
13 However, regardless of how these loans are treated for rate-making purposes, the loans do
14 exist and present financial risk in the minds of investors. Accordingly, Staff recognized
15 the real financial risk presented by these loans in calculating an ROE estimate, as
16 discussed in Section VII of this testimony.

17
18 **IV. RETURN ON EQUITY**

19 *Background*

20 **Q. Please define the term "cost of equity capital".**

21 A. The cost of equity is the rate of return that investors expect to earn on their investment in a
22 business entity given its risk. In other words, the cost of equity to the entity is the
23 investors' expected rate of return on other investments of similar risk. As investors have a
24 wide selection of stocks to choose from, they will choose stocks with similar risks but
25 higher returns. Therefore, the market determines the entity's cost of equity.

1 **Q. Is there a correlation between interest rates and the cost of equity?**

2 A. Yes. The cost of equity tends to move in the same direction as interest rates. This
3 relationship is part of the CAPM formula. The CAPM is a market based model employed
4 by Staff for estimating the cost of equity. The CAPM is further discussed in Section V of
5 this testimony.

6
7 **Q. What has been the general trend of interest rates in recent years?**

8 A. A chronological chart of interest rates is a good tool to show interest rate history and
9 identify trends. Chart 1 graphs intermediate U.S. treasury rates from September 1999 to
10 September 2009.

11
12 **Chart 1: Average Yield on 5-, 7-, & 10-Year Treasuries**

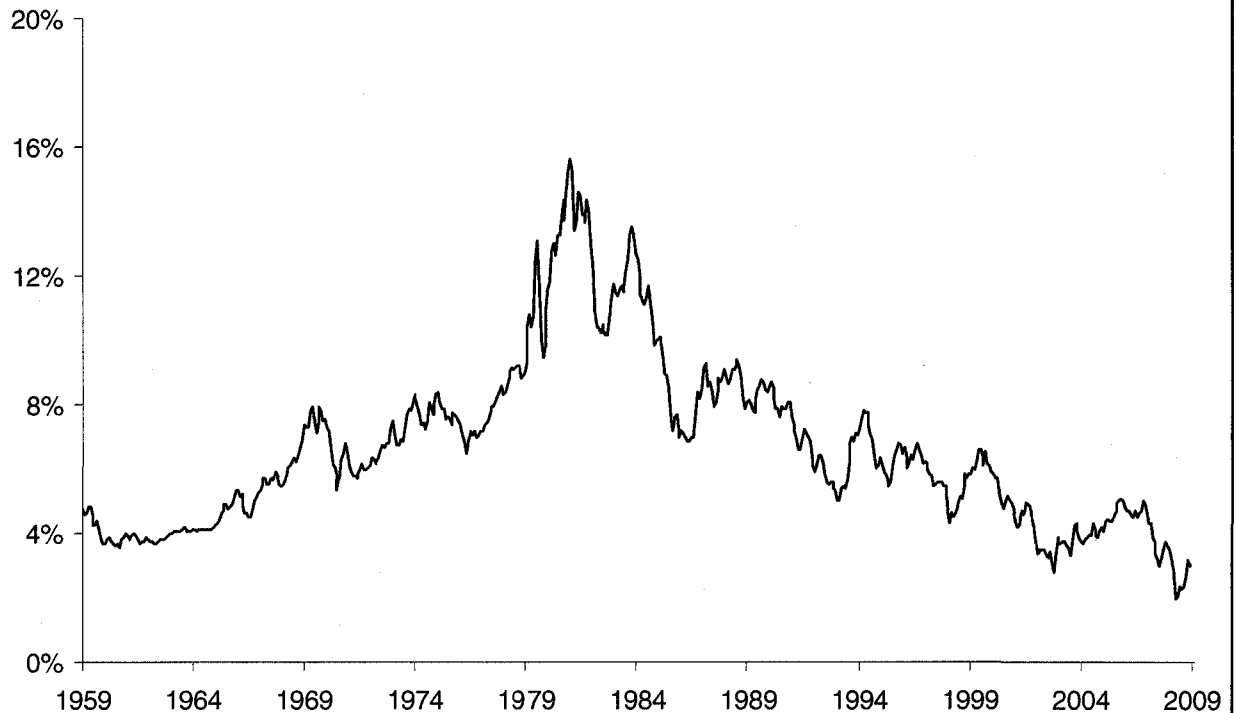


Chart 1 shows that intermediate interest rates trended downward from 2000 to mid-2003, then turned slightly upward until mid-2007, and have trended downward in the past two years.

Q. What has been the general trend in interest rates longer term?

A. U.S. Treasury rates from 1959 to present are shown in Chart 2. The chart shows that interest rates trended upward through the mid-1980s and have trended downward over the last 25 years.

Chart 2: History of 5- and 10-Year Treasury Yields



1 **Q. Do these trends suggest anything in terms of cost of equity?**

2 A. Yes. As previously demonstrated, interest rates and cost of equity tend to move in the
3 same direction; therefore, cost of equity has declined in the past 25 years.
4

5 **Q. Do actual returns represent the cost of equity?**

6 A. No. The cost of equity represents investors' *expected* returns and not realized returns.
7

8 **Q. Is there any information available that leads to an understanding of the relationship**
9 **between the equity returns required for a regulated water utility and those required**
10 **in the market as a whole?**

11 A. Yes. A comparison of betas, a component of the CAPM discussed in Section V, for the
12 water utility industry and the market provide insight into this relationship. The average
13 beta (0.82)¹ for a water utility is lower than the theoretical average beta for all stocks (1.0).
14 According to the CAPM formula, the cost of equity capital moves in the same direction as
15 beta. Since the beta for the water utility industry is lower than the beta for the market, the
16 implication is that the required return on equity for a regulated water utility is below the
17 average required return on the market.
18

19 *Risk*

20 **Q. Please define risk in relation to cost of capital.**

21 A. Risk, as it relates to an investment, is the variability or uncertainty of the returns on a
22 particular security. Investors are risk averse and require a greater potential return to invest
23 in relatively greater risk opportunities, i.e., investors require compensation for taking on
24 additional risk. Risk is generally separated into two components. Those components are
25 market risk (systematic risk) and non-market risk (diversifiable risk or firm-specific risk).

¹ See Schedule JCM-6

1 **Q. What is market risk?**

2 A. Market risk or systematic risk is the risk of an investment that cannot be reduced through
3 diversification. Market risk stems from factors that affect all securities such as recessions,
4 war, inflation and high interest rates. Since these factors affect the entire market they
5 cannot be eliminated through diversification. Market risk does not impact each security to
6 the same degree. The degree to which any security's returns is affected by the market can
7 be measured using Beta. Beta reflects the business risk and the financial risk of a security.

8
9 **Q. Please define business risk.**

10 A. Business risk is the fluctuation of earnings inherent in a firm's operations and environment
11 such as competition and adverse economic conditions that may impair its ability to
12 provide returns on investment. Companies in the same or similar line of business tend to
13 experience the same fluctuations in business cycles.

14
15 **Q. Please define financial risk.**

16 A. Financial risk is the fluctuation of earnings inherent in the use of debt financing by a firm
17 and which may impair its ability to provide adequate return. The more a company uses
18 debt financing, the more the company becomes exposed to financial risk.

19
20 **Q. Do business risk and financial risk affect the cost of equity?**

21 A. Yes.

22
23 **Q. Is a firm subject to any other risk?**

24 A. Yes. Firms are also subject to unsystematic or firm-specific risk. Examples of
25 unsystematic risk include losses caused by labor problems, nationalization of assets, loss

1 of a big client or weather conditions. Investors can eliminate firm-specific risk by holding
2 a diverse portfolio; thus, such risk is not of concern to diversified investors.

3
4 **Q. How does Black Mountain's financial risk compare to the sample water companies'**
5 **financial risk from the perspective of an investor that recognizes as debt the two**
6 **capital leases the Commission treats as operating expense for ratemaking proposes?**

7 A. From an investor's perspective, Black Mountain's capital structure is composed of
8 approximately 21.6 percent debt and 78.4 percent equity. Schedule JCM-4 shows the
9 capital structures of six publicly traded water companies ("sample water companies") as
10 of July 2009, as well as Black Mountain's actual capital structure. As of July 2009, the
11 sample water utilities were capitalized with approximately 50.2 percent debt and 49.8
12 percent equity, while Black Mountain's actual capital structure consists of approximately
13 21.6 percent debt and 78.4 percent equity. Thus, Black Mountain's shareholders bear less
14 financial risk than the shareholders of the sample companies.

15
16 **Q. Is firm-specific risk measured by beta?**

17 A. No. Firm-specific risk is not measured by beta.

18
19 **Q. Is the cost of equity affected by firm-specific risk?**

20 A. No. Since firm-specific risk can be eliminated through diversification, it does not affect
21 the cost of equity.

22
23 **Q. Can investors expect additional returns for firm-specific risk?**

24 A. No. Investors who hold diversified portfolios can eliminate firm-specific risk, and
25 consequently do not require any additional return. Since investors who choose to be less

1 than fully diversified must compete in the market with fully-diversified investors, the
2 former cannot expect to be compensated for unique risk.

3
4 **V. ESTIMATING THE COST OF EQUITY**

5 *Introduction*

6 **Q. Did Staff directly estimate the cost of equity for Black Mountain?**

7 A. No. Since Black Mountain is not a publicly traded company, Staff is unable to directly
8 estimate Black Mountain's cost of equity due to the unavailability of financial
9 information. Instead, Staff uses an average of a representative sample group to reduce the
10 sample error resulting from random fluctuations in the market at the time the information
11 is gathered.

12
13 **Q. What companies did Staff select as proxies or comparables for Black Mountain?**

14 A. Staff's sample consists of the following six publicly-traded water utilities: American
15 States Water, California Water, Connecticut Water Services, Middlesex Water, Aqua
16 America and SJW Corp. These companies were chosen because they are publicly traded
17 and receive the majority of their earnings from regulated operations.

18
19 **Q. What models did Staff implement to estimate Black Mountain's cost of equity?**

20 A. Staff used two market-based models to estimate the cost of equity for Black Mountain: the
21 DCF model and the CAPM.

22
23 **Q. Please explain why Staff chose the DCF and CAPM models.**

24 A. Staff chose to use the DCF and CAPM models because they are widely-recognized
25 market-based models and have been used extensively to estimate the cost of equity. An
26 explanation of the DCF and CAPM models follows.

Discounted Cash Flow Model Analysis

Q. Please provide a brief summary of the theory upon which the DCF method of estimating the cost of equity is based.

A. The DCF method of stock valuation is based on the theory that the value of an investment is equal to the sum of the future cash flows generated from the aforementioned investment discounted to the present time. This method uses expected dividends, market price and dividend growth rate to calculate the cost of capital. Professor Myron Gordon pioneered the DCF method in the 1960s. The DCF method has become widely used to estimate the cost of equity for public utilities due to its theoretical merit and its simplicity. Staff used the financial information for the relevant six sample companies in the DCF model and averaged the results to determine an estimated cost of capital for the sample companies.

Q. Does Staff use more than one version of the DCF Model?

A. Yes. Staff uses two versions of the DCF model: the constant-growth DCF Model and the multi-stage or non-constant growth DCF. The constant-growth DCF Model assumes that an entity's dividends will grow indefinitely at the same rate. The multi-stage growth DCF model assumes the dividend growth rate will change at some point in the future.

The Constant-Growth DCF

Q. What is the mathematical formula used in Staff's constant-growth DCF analysis?

A. The constant-growth DCF formula used in Staff's analysis is:

Equation 2 :

$$K = \frac{D_1}{P_0} + g$$

where : K = the cost of equity
 D_1 = the expected annual dividend
 P_0 = the current stock price
 g = the expected infinite annual growth rate of dividends

Equation 2 assumes that the entity has a constant earnings retention rate and that its earnings are expected to grow at a constant rate. According to Equation 2, a stock with a current market price of \$10 per share, an expected annual dividend of \$0.45 per share and an expected dividend growth rate of 3.0 percent per year has a cost of equity to the entity of 7.5 percent, reflected by the sum of the dividend yield ($\$0.45 / \$10 = 4.5$ percent) and the 3.0 percent annual dividend growth rate.

Q. How did Staff calculate the dividend yield component (D_1/P_0) of the constant-growth DCF formula?

A. Staff calculated the yield component of the DCF formula by dividing the expected annual dividend² (D_1) by the spot stock price (P_0) after the close of the market August 26, 2009, as reported by *MSN Money*.

Q. Why did Staff use the August 26, 2009, spot price rather than a historical average stock price to calculate the dividend yield component of the DCF formula?

A. Current, rather than historic, market stock price is used in order to be consistent with finance theory, i.e., the efficient market hypothesis. The efficient market hypothesis asserts that the current stock price reflects all available information on a stock including

² Value Line Summary & Index. 08-26-09

1 investors' expectations of future returns. Use of a historical average of stock prices
2 illogically discounts the most recent information in favor of less recent information. The
3 latter is stale and is representative of underlying conditions that may have changed.
4

5 **Q. How did Staff estimate the dividend growth (g) component of the constant-growth**
6 **DCF model represented by Equation 2?**

7 A. The dividend growth component used by Staff is determined by the average of six
8 different estimation methods as shown in Schedule JCM-8. Staff calculated historical and
9 projected growth estimates on dividend-per-share ("DPS")³, earnings-per-share ("EPS")⁴
10 and sustainable growth bases.
11

12 **Q. Why did Staff examine EPS growth to estimate the dividend growth component of**
13 **the constant-growth DCF model?**

14 A. Historic and projected EPS growth are used because dividends are related to earnings.
15 Dividend distributions may exceed earnings in the short run, but cannot continue
16 indefinitely. In the long term, dividend distributions are dependent on earnings.
17

18 **Q. How did Staff estimate historical DPS growth?**

19 A. Staff estimated historical DPS growth by calculating the average rate of growth in DPS of
20 the sample water companies from 1998 to 2008. The results of that calculation are shown
21 in Schedule JCM-5. Staff calculated an average historical DPS growth rate of 3.1 percent
22 for the sample water utilities for the aforementioned period.
23

³ Derived from information provided by *Value Line*

⁴ Derived from information provided by *Value Line*

1 **Q. How did Staff estimate the projected DPS growth?**

2 A. Staff calculated an average of the projected DPS growth rates for the sample water utilities
3 from *Value Line*. The average projected DPS growth rate is 4.3 percent, as shown in
4 Schedule JCM-5.

5
6 **Q. How did Staff calculate the historical EPS growth rate?**

7 A. Staff estimated historical EPS growth by calculating the average rate of growth in EPS of
8 the sample water companies from 1998 to 2008. Staff calculated an average historical
9 EPS growth rate of 3.4 percent for the sample water utilities for the aforementioned
10 period, as shown in Schedule JCM-5.

11
12 **Q. How did Staff estimate the projected EPS growth?**

13 A. Staff calculated an average of the projected EPS growth rates for the sample water utilities
14 from *Value Line*. The average projected EPS growth rate is 9.7 percent, as shown in
15 Schedule JCM-5.

16
17 **Q. How does Staff calculate its historical and projected sustainable growth rates?**

18 A. Historical and projected sustainable growth rates are calculated by adding their respective
19 retention growth rate terms (br) to their respective stock financing growth rate terms (vs),
20 as shown in Schedule JCM-6.

21
22 **Q. What is retention growth?**

23 A. Retention growth is the growth in dividends due to the retention of earnings. The
24 retention growth concept is based on the theory that dividend growth cannot be achieved
25 unless the company retains and reinvests some of its earnings. The retention growth is
26 used in Staff's calculation of sustainable growth shown in Schedule JCM-6.

1 **Q. What is the formula for the retention growth rate?**

2 A. The retention growth rate is the product of the retention ratio and the book/accounting
3 return on equity. The retention growth rate formula is:

4 Equation 3:

$$\text{Retention Growth Rate} = br$$

where: b = the retention ratio (1 – dividend payout ratio)
 r = the accounting/book return on common equity

5
6 **Q. How did Staff calculate the average historical retention growth rate (br) for the**
7 **sample water utilities?**

8 A. Staff calculated the historical retention rates by averaging the retention rates for the
9 sample water companies from 1999 to 2008. The historical average retention (br) growth
10 for the sample water utilities is 3.0 percent, as shown in Schedule JCM-6.

11
12 **Q. How did Staff determine projected retention growth rate (br) for the sample water**
13 **utilities?**

14 A. Staff used the retention growth projections for the sample water utilities for the period
15 2012 to 2014 from *Value Line*. The projected average retention growth rate for the sample
16 water utilities is 6.0 percent, as shown in Schedule JCM-6.

17
18 **Q. When can retention growth provide a reasonable estimate of future dividend**
19 **growth?**

20 A. The retention growth rate is a reasonable estimate of future dividend growth when the
21 retention ratio is reasonably constant and the entity's market price to book value ("market-
22 to-book ratio") is expected to be 1.0. The average retention ratio has been reasonably

1 constant in recent years. However, the market-to-book ratio for the sample water utilities
2 is 1.7, notably higher than 1.0, as shown in Schedule JCM-7.

3
4 **Q. Is there any financial implication of a market-to-book ratio greater than 1.0?**

5 A. Yes. A market-to-book ratio greater than 1.0 implies that investors expect an entity to
6 earn an accounting/book return on its equity that exceeds its cost of equity. The
7 relationship between required returns and expected cash flows is readily observed in the
8 fixed securities market. For example, assume an entity contemplating issuance of bonds
9 with a face value of \$10 million at either 6 percent or 8 percent, and thus, paying annual
10 interest of \$600,000 or \$800,000, respectively. Regardless of investors' required return on
11 similar bonds, investors will be willing to pay more for the bonds if issued at 8 percent
12 than if the bonds are issued at 6 percent. For example, if the current interest rate required
13 by investors is 6 percent, then they would bid \$10 million for the 6 percent bonds and
14 more than \$10 million for the 8 percent bonds. Similarly, if equity investors require a 9
15 percent return and expect an entity to earn accounting/book returns of 13 percent, the
16 market will bid up the price of the entity's stock to provide the required return of 9
17 percent.

18
19 **Q. How has Staff generally recognized a market-to-book ratio exceeding 1.0 in its cost of
20 equity analyses in recent years?**

21 A. Staff has assumed that investors expect the market-to-book ratio to remain greater than
22 1.0. Given that assumption, Staff has added a stock financing growth rate (vs) term to the
23 retention ratio (br) term to calculate its historical and projected sustainable growth rates.
24

A. Yes.

A. Stock financing growth is the growth in an entity's dividends due to the sale of stock by that entity. Stock financing growth is a concept derived by Myron Gordon and discussed in his book *The Cost of Capital to a Public Utility*.⁵ Stock financing growth is the product of the fraction of the funds raised from the sale of stock that accrues to existing shareholders (v) and the fraction resulting from dividing the funds raised from the sale of stock by the existing common equity(s).

A. The mathematical formula for stock financing growth is:

Stock Financing Growth = vs

where :

- v = Fraction of the funds raised from the sale of stock that accrues to existing shareholders
- s = Funds raised from the sale of stock as a fraction of the existing common equity

A. Variable v is calculated as follows:

⁵ Gordon, Myron J. *The Cost of Capital to a Public Utility*. MSU Public Utilities Studies, Michigan, 1974. pp 31-35.

Equation 5:

$$v = 1 - \left(\frac{\text{book value}}{\text{market value}} \right)$$

For example, assume that a share of stock has a \$30 book value and is selling for \$45.

Then, to find the value of v , the formula is applied:

$$v = 1 - \left(\frac{30}{45} \right)$$

In this example, v is equal to 0.33.

Q. How is the variable s presented above calculated?

A. Variable s is calculated as follows:

Equation 6:

$$s = \frac{\text{Funds raised from the issuance of stock}}{\text{Total existing common equity before the issuance}}$$

For example, assume that an entity has \$150 in existing equity, and it sells \$30 of stock.

Then, to find the value of s , the formula is applied:

$$s = \left(\frac{30}{150} \right)$$

In this example, s is equal to 20.0 percent.

Q. What is the vs term when the market-to-book ratio is equal to 1.0?

A. A market-to-book ratio equal to 1.0 reflects that investors expect an entity to earn a book/accounting return on their equity investment equal to the cost of equity. When the

1 market-to-book ratio is equal to 1.0, none of the funds raised from the sale of stock by the
2 entity accrues to the benefit of existing shareholders, i.e., the term v is equal to zero (0.0).
3 Consequently, the vs term is also equal to zero (0.0). When stock financing growth is
4 zero, dividend growth depends solely on the br term.

5
6 **Q. What is the effect of the vs term when the market-to-book ratio is greater than 1.0?**

7 A. A market-to-book ratio greater than 1.0 reflects that investors expect an entity to earn a
8 book/accounting return on their equity investment greater than the cost of equity.
9 Equation 5 shows that when the market-to-book ratio is greater than 1.0 the v term is also
10 greater than zero. The excess by which new shares are issued and sold over book value
11 per share of outstanding stock is a contribution that accrues to existing stockholders in the
12 form of a higher book value. The resulting higher book value leads to higher expected
13 earnings and dividends. Continued growth from the vs term is dependent upon the
14 continued issuance and sale of additional shares at a price that exceeds book value per
15 share.

16
17 **Q. What vs estimate did Staff calculate from its analysis of the sample water utilities?**

18 A. Staff estimated an average stock financing growth of 2.0 percent for the sample water
19 utilities, as shown in Schedule JCM-6.

20
21 **Q. What would occur if an entity had a market-to-book ratio greater than 1.0 as a result
22 of investors expecting earnings to exceed the cost of equity capital and the entity
23 subsequently experienced newly authorized rates equal to its cost of equity capital?**

24 A. Market pressure on the entity's stock price to reflect the change in future expected cash
25 flows would cause the market-to-book ratio to move toward 1.0.

26

1 **Q. What would the impact be if the average market-to-book ratio of the sample water**
2 **utilities fell to 1.0 due to authorized ROEs equaling the cost of equity?**

3 A. In that case, Staff's inclusion of the *vs* term in the constant-growth DCF analysis would
4 result in an overestimation of its sustainable dividend growth rate and the resulting DCF
5 ROE estimate. Inclusion of the *vs* term assumes that the market-to-book ratio continues to
6 exceed 1.0 and that the water utilities will continue to issue and sell stock at prices above
7 book value with the effect of benefitting existing shareholders. If the market-to-book ratio
8 declines to 1.0, the stock financing term is not necessary.

9
10 **Q. What are Staff's historical and projected sustainable growth rates?**

11 A. Staff's estimated historical sustainable growth rate is 5.1 percent based on an analysis of
12 earnings retention for the sample water companies. Staff's projected sustainable growth
13 rate is 9.0 percent based on retention growth projected by *Value Line*. Schedule JCM-6
14 presents Staff's estimates of the sustainable growth rate.

15
16 **Q. What is Staff's expected infinite annual growth rate in dividends?**

17 A. Staff's expected infinite annual growth rate in dividends is 5.8 percent, which is the
18 average of historical and projected DPS, EPS, and sustainable growth estimates. Staff's
19 calculation of the expected infinite annual growth rate in dividends is shown in Schedule
20 JCM-8.

21
22 **Q. What is Staff's constant-growth DCF estimate?**

23 A. Staff's constant-growth DCF estimate is 9.4 percent as shown in Schedule JCM-3.
24

The Multi-Stage DCF

Q. Why did Staff implement the multi-stage DCF model to estimate Black Mountain's cost of equity?

A. Staff generally uses the multi-stage DCF model to consider the assumption that dividends may not grow at a constant rate. The multi-stage DCF uses two stages of growth. The first stage is four years followed by the second constant growth stage.

Q. What is the mathematical formula for the multi-stage DCF?

A. The multi-stage DCF formula is shown in the following equation:

Equation 7 :

$$P_0 = \sum_{t=1}^n \frac{D_t}{(1+K)^t} + \frac{D_n(1+g_n)}{K-g_n} \left[\frac{1}{(1+K)} \right]^n$$

Where : P_0 = current stock price

D_t = dividends expected during stage 1

K = cost of equity

n = years of non – constant growth

D_n = dividend expected in year n

g_n = constant rate of growth expected after year n

Q. What steps did Staff take to implement its multi-stage DCF cost of equity model?

A. First, Staff projected future dividends for each of the sample water utilities using near-term and long-term growth rates. Second, Staff calculated the rate (cost of equity) which equates the present value of the forecasted dividends to the current stock price for each of the sample water utilities. Lastly, Staff calculated an average of the individual sample company cost of equity estimates.

1 **Q. How did Staff calculate near-term (stage-1) growth?**

2 A. The stage-1 growth rate is based on *Value Lines*' projected dividends for the next twelve
3 months, when available, and on the average dividend growth rate (5.8 percent) calculated
4 in Staff's constant DCF analysis for the remainder of the stage.

5
6 **Q. How did Staff estimate long-term (stage-2) growth?**

7 A. Staff calculated the stage-2 growth rate using the arithmetic mean rate of growth in GDP
8 from 1929 to 2008.⁶ Using the GDP growth rate assumes that the water utility industry is
9 expected to grow at the same rate as the overall economy.

10
11 **Q. What is the historical GDP growth rate that Staff used to estimate stage-2 growth?**

12 A. Staff used 6.7 percent to estimate the stage-2 growth rate.

13
14 **Q. What is Staff's multi-stage DCF estimate?**

15 A. Staff's multi-stage DCF estimate is 10.2 percent, as shown in Schedule JCM-3.

16
17 **Q. What is Staff's overall DCF estimate?**

18 A. Staff's overall DCF estimate is 9.8 percent. Staff calculated the overall DCF estimate by
19 averaging the constant growth DCF (9.4%) and multi-stage DCF (10.2%) estimates, as
20 shown in Schedule JCM-3.

21
22 *Capital Asset Pricing Model*

23 **Q. Please describe the CAPM.**

24 A. The CAPM is used to determine the prices of securities in a competitive market. The
25 CAPM model describes the relationship between a security's investment risk and its

⁶ www.bea.doc.gov

1 market rate of return. Under the CAPM an investor requires the expected return of a
2 security to equal the rate on a risk-free security plus a risk premium. If the investor's
3 expected return does not meet or beat the required return, the investment is not
4 economically justified. The model also assumes that investors will sufficiently diversify
5 their investments to eliminate any non-systematic or unique risk.⁷ In 1990, Professors
6 Harry Markowitz, William Sharpe, and Merton Miller earned the Nobel Prize in
7 Economic Sciences for their contribution to the development of the CAPM.

8
9 **Q. Did Staff use the same sample water utilities in its CAPM and DCF cost of equity**
10 **estimation analyses?**

11 A. Yes. Staff's CAPM cost of equity estimation analysis uses the same sample water
12 companies as its DCF cost of equity estimation analysis.

13
14 **Q. What is the mathematical formula for the CAPM?**

15 A. The mathematical formula for the CAPM is:
16

Equation 8:

$$K = R_f + \beta (R_m - R_f)$$

where: R_f = risk free rate
 R_m = return on market
 β = beta
 $R_m - R_f$ = market risk premium
 K = expected return

17

⁷ The CAPM makes the following assumptions: 1) single holding period; 2) perfect and competitive securities market; 3) no transaction costs; 4) no restrictions on short selling or borrowing; 5) the existence of a risk-free rate; and 6) homogeneous expectations.

1 The equation shows that the expected return (K) on a risky asset is equal to the risk-free
2 interest rate (R_f) plus the product of the market risk premium (" R_p ") ($R_m - R_f$) multiplied
3 by beta (β) where beta represents the riskiness of the investment relative to the market.

4
5 **Q. What is the risk free rate?**

6 A. The risk free rate is the rate of return of an investment with zero risk.

7
8 **Q. How does Staff estimate the risk-free rate of interest in its historical market risk**
9 **premium CAPM method?**

10 A. Staff uses two calculations for estimates of the risk-free rate of interest. Staff uses the
11 average of three (five-, seven-, and ten-year) intermediate-term U.S. Treasury securities'
12 spot rates for its historical market risk premium CAPM cost of equity estimation, and the
13 30-year U.S. Treasury bond spot rate for its current market risk premium CAPM cost of
14 equity estimation. U.S. Treasuries are largely verifiable and readily available.

15
16 **Q. What does beta measure?**

17 A. Beta measures the volatility, or systematic risk, of a security relative to the market. Since
18 systematic risk cannot be diversified away, it is the only risk that is relevant when
19 estimating a security's required return. Using a baseline market beta of 1.0, a security
20 with a beta less than 1.0 will be less volatile than the market. A security with a beta
21 greater than 1.0 will be more volatile than the market.

22
23 **Q. How did Staff estimate Black Mountain's beta?**

24 A. Staff used the average of the *Value Line* betas for the sample water utilities as a proxy for
25 Black Mountain's beta. Schedule JCM-7 shows the *Value Line* betas for each of the
26 sample water utilities. The 0.82 average beta for the sample water utilities is Staff's

1 estimated beta for Black Mountain. A security with a 0.82 beta has less volatility than the
2 market.

3
4 **Q. Please describe expected market risk premium ($R_m - R_f$)?**

5 A. The expected market risk premium is the expected return on the market above the risk-free
6 rate. Simplified, it is the return an investor expects as compensation for market risk.

7
8 **Q. What did Staff use for the market risk premium?**

9 A. Staff uses two calculations for the market risk premium: 1) an historical market risk
10 premium and 2) a current market risk premium.

11
12 **Q. How did Staff calculate an estimate for the historical market risk premium?**

13 A. Staff uses the intermediate-term government bond income returns published in the
14 Ibbotson Associates' *Stocks, Bonds, Bills, and Inflation 2008 Yearbook* to calculate the
15 historical market risk premium. Ibbotson Associates calculates the historical risk
16 premium by averaging the historical arithmetic differences between the S&P 500 and the
17 intermediate-term government bond income returns for the period 1926-2008. Staff's
18 historical market risk premium estimate is 6.9 percent, as shown in Schedule JCM-3.

19
20 **Q. How did Staff calculate an estimate for the current market risk premium?**

21 A. Staff solves equation 8 above to arrive at a market risk premium using a DCF-derived
22 expected return (K) of 14.67 (2.2 + 12.47⁸) percent using the expected dividend yield (2.2
23 percent over the next twelve months) and the annual per share growth rate (12.47 percent)
24 that *Value Line* projects for all dividend-paying stocks under its review⁹ along with the

⁸ The three to five year price appreciation is 60%. $1.60^{0.25} - 1 = 12.47\%$

⁹ September 4, 2009 issue date.

1 current long-term risk-free rate (30-year Treasury note at 4.20 percent) and the market's
2 average beta of 1.0. Staff calculated the current market risk premium as 10.47.¹⁰

3
4 **Q. How are the historical market risk premium and current market risk premium**
5 **estimates used?**

6 A. Each is used to calculate a CAPM cost of equity estimate, i.e., Staff calculated an
7 historical market risk premium CAPM cost of equity estimate and a current market risk
8 premium CAPM cost of equity estimate.

9
10 **Q. What is the result of Staff's historical market risk premium CAPM and current**
11 **market risk premium cost of equity estimations?**

12 A. Staff's cost of equity estimates are 8.7 percent using the historical market risk premium
13 CAPM and 12.7 using the current market risk premium CAPM.

14
15 **Q. What is Staff's overall CAPM estimate?**

16 A. Staff's overall CAPM cost of equity estimate is 10.7 percent which is the average of the
17 historical market risk premium CAPM (8.7 percent) and the current market risk premium
18 CAPM (12.7 percent) estimates, as shown in Schedule JCM-3.

19
20 **VI. SUMMARY OF STAFF'S COST OF EQUITY ANALYSIS**

21 **Q. What is the result of Staff's constant-growth DCF analysis to estimate the cost of**
22 **equity to the sample water utilities?**

23 A. Schedule JCM-3 shows the result of Staff's constant-growth DCF analysis. The result of
24 Staff's constant-growth DCF analysis is as follows:

25

¹⁰ 14.67% = 4.20% + (1) (10.47%)

$k = 3.6\% + 5.8\%$

$k = 9.4\%$

Staff's constant-growth DCF estimate of the cost of equity to the sample water utilities is 9.4 percent.

Q. What is the result of Staff's multi-stage DCF analysis to estimate the cost of equity for the sample utilities?

A. Schedule JCM-9 shows the result of Staff's multi-stage DCF analysis. The result of Staff's multi-stage DCF analysis is:

Company	Equity Cost Estimate (k)
American States Water	9.6%
California Water	9.8%
Aqua America	9.9%
Connecticut Water	10.8%
Middlesex Water	11.4%
SJW Corp	<u>9.6%</u>
Average	10.2%

Staff's multi-stage DCF estimate of the cost of equity for the sample water utilities is 10.2 percent.

Q. What is Staff's overall DCF estimate of the cost of equity for the sample utilities?

A. Staff's overall DCF estimate of the cost of equity for the sample utilities is 9.8 percent. Staff's overall DCF estimate was calculated by averaging Staff's constant growth DCF and Staff's multi-stage DCF estimates, as shown in Schedule JCM-3.

1 **Q. What is the result of Staff's historical market risk premium CAPM analysis to**
2 **estimate of the cost of equity for the sample utilities?**

3 A. Schedule JCM-3 shows the result of Staff's CAPM analysis using the historical risk
4 premium estimate. The result is as follows:

5
$$k = 3.0\% + 0.82 * 6.9\%$$

6
$$k = 8.7\%$$

7
8 Staff's CAPM estimate (using the historical market risk premium) of the cost of equity to
9 the sample water utilities is 8.7 percent.

10
11 **Q. What is the result of Staff's current market risk premium CAPM analysis to**
12 **estimate the cost of equity for the sample utilities?**

13 A. Schedule JCM-3 shows the result of Staff's CAPM Analysis using the current market risk
14 premium estimate. The result is:

15
$$k = 4.2\% + 0.82 * 10.5\%$$

16
$$k = 12.7\%$$

17
18 Staff's CAPM estimate (using the current market risk premium) of the cost of equity to the
19 sample water utilities is 12.7 percent.

20
21 **Q. What is Staff's overall CAPM estimate of the cost of equity for the sample utilities?**

22 A. Staff's overall CAPM estimate for the sample utilities is 10.7 percent. Staff's overall
23 CAPM estimate is the average of the historical market risk premium CAPM (8.7 percent)
24 and the current market risk premium CAPM (12.7 percent) estimates, as shown in
25 Schedule JCM-3.

26

1 **Q. Please summarize the results of Staff's cost of equity analysis for the sample utilities.**

2 **A.** The following table shows the results of Staff's cost of equity analysis:

3
4 **Table 2**

Method	Estimate
Average DCF Estimate	9.8%
Average CAPM Estimate	10.7%
Overall Average	10.3%

5
6 Staff's average estimate of the cost of equity to the sample water utilities is 10.3 percent.

7
8 **VII. FINAL COST OF EQUITY ESTIMATES FOR BLACK MOUNTAIN**

9 **Q. Do Black Mountain's loans affect its cost of equity despite their recognition as**
10 **operating expenses for rate-making purposes?**

11 **A.** Yes. An entity's financial risk increases with increased leverage placing upward pressure
12 on its cost of equity, regardless of the rate-making recovery mechanism. The average
13 capital structure for the sample water utilities is composed of 49.8 percent equity and 50.2
14 percent debt, as shown on Staff Schedule JCM-4. Black Mountain's actual capital
15 structure is composed of 78.4 percent equity and 21.6 percent debt. In this case, since
16 Black Mountain's capital structure is less leveraged than that of the average sample water
17 utilities' capital structure, its stockholders bear less financial risk than the sample water
18 utilities. Accordingly, Black Mountain's cost of equity is lower than the sample water
19 utilities.
20

1 **Q. What method does Staff use to calculate the effect on the cost of equity capital of the**
2 **different financial risks posed by Black Mountain versus the sample companies?**

3 A. Staff uses the methodology developed by Professor Robert Hamada of the University of
4 Chicago, which incorporates capital structure theory with the CAPM, to estimate the
5 effect of Black Mountain's capital structure on its cost of equity. Staff calculated a
6 financial risk adjustment for Black Mountain of negative 70 basis points based on the
7 Company's actual capital structure of 78.4 percent equity and 21.6 percent debt in order to
8 reflect the Company's actual financial risk. Black Mountain's cost of equity adjusted for
9 financial risk (9.6 percent) can be determined by subtracting this 0.7 percent financial risk
10 adjustment from Staff's average estimate of the cost of equity to the sample water utilities
11 (10.3 percent).

12
13 **Q. Does Staff's 70 basis point downward financial risk adjustment to the cost of equity**
14 **reflect the full downward measure to the cost of equity due to difference in financial**
15 **risk in Black Mountain's capital structure compared to the sample water utilities?**

16 A. No. Staff calculated its recommended 70 basis point downward financial risk adjustment
17 assuming that the sample companies had a capital structure comprised of 60 percent equity
18 and 40 percent debt instead of the actual average capital structure for the sample
19 companies and assuming the Company's actual capital structure composed of 78.4 percent
20 equity and 21.6 percent debt instead of the Company's ratemaking capital structure
21 composed of 100.0 percent equity and 0.0 percent debt. If Staff had measured the
22 financial risk adjustment using 100 percent equity for the Company's capital structure and
23 60 percent equity for the sample companies, the downward financial risk adjustment
24 would have been 120 basis points. The calculated downward financial risk adjustment
25 would have been greater than 120 basis points if measured using 100 percent equity for
26 the Company's capital structure and the sample companies' actual average equity of 49.8

Q. What is Staff's ROE estimate for Black Mountain?

VIII. RATE OF RETURN RECOMMENDATION

Q. What overall rate of return did Staff determine for Black Mountain?

A. Staff determined a 9.6 percent ROR for the Applicant, as shown in Schedule JCM-1 and the following table:

Table 3

	Weight	Cost	Weighted Cost
Long-term Debt	0.0%	9.4%	0.0%
Common Equity	100.0%	9.6%	<u>9.6%</u>
Overall ROR			<u>9.6%</u>

IX. STAFF RESPONSE TO APPLICANT'S COST OF CAPITAL WITNESS MR. THOMAS J. BOURASSA

Q. Please summarize Mr. Bourassa's analyses and recommendations.

A. Mr. Bourassa recommends a 12.8 percent ROE based on analyses for single and multi-stage DCF models, as well as historical and current market risk premium CAPM for the same sample of water companies selected by Staff. Mr. Bourassa also asserts that Black Mountain faces additional risks not captured by the market models, such as regulatory and financial risk, and he concludes that 12.8 percent ROE presents a reasonable balance resulting from his analyses. Mr. Bourassa also proposes 12.8 percent for the overall ROR since his capital structure consists of 100 percent equity.

Constant-Growth DCF

Q. Does Staff have any comments on Mr. Bourassa's sole reliance on analysts' forecasts to estimate DPS growth in his constant growth DCF estimates?

A. Yes. Generally, analysts' forecasts are known to be overly optimistic. Sole use of analysts' forecasts to calculate the growth in dividends (g) causes inflated growth, and consequently, inflated cost of equity estimates. Also, relying only on analysts' forecasts of earnings growth to forecast DPS is inappropriate because it assumes that investors do not look at other relevant information such as past dividend and earnings growth.

1 **Q. Does Staff have any comments on the study cited by Mr. Bourassa, conducted by**
2 **David A. Gordon, Myron J. Gordon and Lawrence I. Gould,¹¹ that he asserts**
3 **supports exclusive use of analysts' forecasts in the DCF model?**

4 A. Yes. The article cited by Mr. Bourassa does not conclude that investors ignore past
5 growth when pricing stocks. Instead, the article describes more generally that methods
6 exclusively using analysts' forecasts are "popular or attractive models;" but the article
7 does not support the conclusion that these forecasts should be used alone.

8
9 **Q. Does Professor Gordon recommend relying exclusively on analysts' forecasts as the**
10 **measure of growth in the DCF model?**

11 A. No. Subsequent to the study cited by Mr. Bourassa,¹² Professor Gordon provided the
12 keynote address at the 30th Financial Forum of the Society of Utility and Regulatory
13 Financial Analysts, in which he stated:

14
15 *I understand that companies coming before regulatory agencies*
16 *liked and advocated the high growth rates in security analyst*
17 *forecasts for arriving at their cost of equity capital. Instead of*
18 *rejecting these forecasts, I understand that FERC and other*
19 *regulatory agencies have decided to compromise with them. In*
20 *particular, in arriving at the cost of equity for company X, the*
21 *FERC has decided to arrive at the growth rate in my dividend*
22 *growth model by using an average of two growth rates. One is*
23 *security analysts forecast of the short-term growth rate in earnings*
24 *provided by IBES or Value Line and the other a more long run and*
25 *typically lower figure such as the past growth in GNP.*

26 *Such an average can be questioned on various grounds. However,*
27 *my judgment is that between the short-term forecast alone and its*

¹¹ Gordon, David A., Myron J. Gordon, Lawrence I. Gould. "Choice Among Methods of Estimating Share Yield." *The Journal of Portfolio Management*. Spring 1989. pp. 50-55. (Bourassa's direct testimony, page 36, footnote.)

¹² Ibid.

1 *average with the past growth rate in GNP, the latter may be a*
2 *more reasonable figure.*¹³ (Emphasis added)

3
4 Simply stated, Professor Gordon would temper the typically higher analysts' forecasts
5 with the typically lower GNP growth rate by averaging the two.

6
7 **Q. How does Staff respond to Mr. Bourassa's statement, "Logically, in estimating future**
8 **growth, financial institutions and analyst have taken into account all relevant**
9 **historical information on a company as well as other more recent information. To**
10 **the extent that past results provide useful indications of future growth prospects,**
11 **analysts' forecasts would already incorporate that information."?** (Bourassa's Direct
12 **Testimony, Page 32, line 6-10).**

13 **A. The appropriate growth rate to use in the DCF formula is the dividend growth rate**
14 **expected by *investors*, not by analysts. Therefore, while analysts may have considered**
15 **historical measures of growth, it is reasonable to assume that investors rely to some extent**
16 **on past growth as well. This calls for consideration of both analysts' forecasts and past**
17 **growth.**

18
19 **Q. Does Staff have any other evidence to support its assertion that exclusive reliance on**
20 **analysts' forecasts of earnings growth in the DCF model would result in inflated cost**
21 **of equity estimates?**

22 **A. Yes. Experts in the financial community have commented on the optimism in analysts'**
23 **forecasts of future earnings.**¹⁴ A study cited by David Dreman in his book *Contrarian*

¹³ Gordon, M. J. Keynote Address at the 30th Financial Forum of the Society of Utility and Regulatory Financial Analysts. May 8, 1998. Transparency 3.

¹⁴ See Seigel, Jeremy J. *Stocks for the Long Run*. 2002. McGraw-Hill. New York. p. 100. Dreman, David. *Contrarian Investment Strategies: The Next Generation*. 1998. Simon & Schuster. New York. pp. 97-98. Malkiel, Burton G. *A Random Walk Down Wall Street*. 2003. W.W. Norton & Co. New York. p. 175. Testimony of Professors Myron J. Gordon and Lawrence I. Gould, consultant to the Trial Staff (Common Carrier Bureau), FCC Docket 79-63, p. 95.

1 *Investment Strategies: The Next Generation* found that *Value Line* analysts were
2 optimistic in their forecasts by 9 percent annually, on average, for the 1987 – 1989 period.
3 Another study conducted by David Dreman found that, between 1982 and 1997, analysts
4 overestimated the growth of earnings of companies in the S&P 500 by 188 percent.

5 Also, Burton Malkiel of Princeton University studied the one-year and five-year earnings
6 forecasts made by some of the most respected names in the investment business. His
7 results showed that the five-year estimates of professional analysts, when compared with
8 actual earnings growth rates, were much more inaccurate than the predictions from several
9 naïve forecasting models, such as the long-run rate of growth of national income. In the
10 following excerpt from Professor Malkiel's book *A Random Walk Down Wall Street*, he
11 discusses the results of his study:

12
13 *When confronted with the poor record of their five-year growth*
14 *estimates, the security analysts honestly, if sheepishly, admitted*
15 *that five years ahead is really too far in advance to make reliable*
16 *projections. They protested that although long-term projections*
17 *are admittedly important, they really ought to be judged on their*
18 *ability to project earnings changes one year ahead. Believe it or*
19 *not, it turned out that their one-year forecasts were even worse*
20 *than their five-year projections.*

21 *The analysts fought back gamely. They complained that it was*
22 *unfair to judge their performance on a wide cross section of*
23 *industries, because earnings for high-tech firms and various*
24 *"cyclical" companies are notoriously hard to forecast. "Try us on*
25 *utilities," one analyst confidently asserted. At the time they were*
26 *considered among the most stable group of companies because of*
27 *government regulation. So we tried it and they didn't like it. Even*
28 *the forecasts for the stable utilities were far off the mark.*¹⁵
29 (Emphasis added)

30

¹⁵ Malkiel, Burton G. *A Random Walk Down Wall Street*. 2003. W.W. Norton & Co. New York. p. 175

1 **Q. Are investors aware of the problems related to analysts' forecasts?**

2 A. Yes. In addition to books, there are numerous published articles appearing in *The Wall*
3 *Street Journal* and other financial publications that cast doubt as to how accurate research
4 analysts are in their forecasts.¹⁶ Investors, being keenly aware of these inherent biases in
5 forecasts, will use other methods to assess future growth.

6
7 **Q. Should DPS growth be considered in a DCF analysis?**

8 A. Yes. As previously stated in Section V of this testimony, the current market price of a
9 stock is equal to the present value of all expected future dividends, not future earnings.
10 Professor Jeremy Siegel from the Wharton School of Finance stated:

11
12 *Note that the price of the stock is always equal to the present value*
13 *of all future dividends and not the present value of future earnings.*
14 *Earnings not paid to investors can have value only if they are paid*
15 *as dividends or other cash disbursements at a later date. Valuing*
16 *stock as the present discounted value of future earnings is*
17 *manifestly wrong and greatly overstates the value of the firm.*¹⁷
18

19 In other words, investors pay attention to earnings as long as they are paid as dividends.
20 Earnings can easily be overstated, but if investors do not receive dividends or other cash
21 disbursement at a later date, then such earnings are meaningless.

22

¹⁶ See Smith, Randall & Craig, Suzanne. "Big Firms Had Research Ploy: Quiet Payments Among Rivals." *The Wall Street Journal*. April 30, 2003. Brown, Ken. "Analysts: Still Coming Up Rosy." *The Wall Street Journal*. January 27, 2003. p. C1. Karmin, Craig. "Profit Forecasts Become Anybody's Guess." *The Wall Street Journal*. January 21, 2003. p. C1. Gasparino, Charles. "Merrill Lynch Investigation Widens." *The Wall Street Journal*. April 11, 2002. p. C4. Elstein, Aaron. "Earnings Estimates Are All Over the Map." *The Wall Street Journal*. August 2, 2001. p. C1. Dreman, David. "Don't Count on those Earnings Forecasts." *Forbes*. January 26, 1998. p. 110.

¹⁷ Siegel, Jeremy J. *Stocks for the Long Run*. 2002. McGraw-Hill. New York. P. 93.

1 Multi-Stage DCF

2 **Q. Does Staff have any comments on Mr. Bourassa's sole reliance on forecasted**
3 **earnings growth for the near-term ("Stage -1 growth") in his multi-stage DCF?**

4 A. Yes. As previously discussed, exclusive reliance on forecasted earnings growth for the
5 near-term (Stage-1 growth) is inappropriate since analysts forecasts of earnings growth are
6 known to be overly optimistic. Reliance on forecasted earnings growth, to the exclusion
7 of historic EPS and historical and projected DPS, likely results in inflated cost of equity
8 estimates.

9
10 Firm-Specific Risk

11 **Q. What is Staff's response to Mr. Bourassa's contention that the market data provided**
12 **by the sample water utilities does not capture all of the market risk associated with**
13 **Black Mountain due to Arizona regulatory requirements use of historical test years**
14 **and limited out of period adjustment recognition?¹⁸**

15 A. The examples cited by Mr. Bourassa are examples of firm-specific or unique risks.
16 Existence of firm-specific risk does not necessarily indicate that a company has more total
17 risk than others, as all companies have firm-specific risks. Moreover, as previously
18 discussed, the market does not compensate investors for firm-specific risk because that
19 risk can be eliminated through diversification.

20

¹⁸ Direct Testimony of Thomas J. Bourassa, Black Mountain Sewer Corporation, Docket No. SW-02361A-08-0609, page 19 lines 25-26

1 **Q. Does Staff have a response to Mr. Bourassa's assertion that a good argument can be**
2 **made that Black Mountain is not comparable to the six publicly traded water utilities**
3 **in the sample group due to a difference in size?¹⁹**

4 **A.** The Commission has previously ruled that firm size does not warrant recognition of a risk
5 premium. In Decision No. 64282, dated December 28, 2001, for Arizona Water, the
6 Commission stated, "We do not agree with the Company's proposal to assign a risk
7 premium to Arizona Water based on its size relative to other publicly traded water
8 utilities...." In Decision No. 64727, dated April 17, 2002, for Black Mountain Gas, the
9 Commission agreed with Staff that "the 'firm size phenomenon' does not exist for
10 regulated utilities, and that therefore there is no need to adjust for risk for small firm size
11 in utility rate regulation." Further, as previously noted, Black Mountain's ultimate parent,
12 Algonquin Power Income Fund, has access to the capital markets.

13
14 **X. CONCLUSION**

15 **Q. Please summarize Staff's recommendations.**

16 **A.** Staff recommends that the Commission adopt a capital structure for Black Mountain in
17 this proceeding composed of 0.0 percent debt and 100.0 percent equity.

18
19 Staff also recommends that the Commission adopt a 9.6 percent ROR for the Applicant,
20 based on Staff's cost of equity estimates that range from 9.8 percent to 10.7 percent for the
21 sample companies and to reflect a 70 basis point downward financial risk adjustment.

22
23 **Q. Does this conclude your Direct Testimony?**

24 **A.** Yes, it does.

¹⁹ Direct Testimony of Thomas J. Bourassa, Black Mountain Sewer Corporation, Docket No. SW-02361A-08-0609, page 22 lines 20-21

Black Mountain Sewer Cost of Capital Calculation
Capital Structure
And Weighted Average Cost of Capital
Staff Recommended and Company Proposed

[A]	[B]	[C]	[D]
<u>Description</u>	<u>Weight (%)</u>	<u>Cost</u>	<u>Weighted Cost</u>
Staff Recommended Structure			
Debt	0.0%	9.4%	0.0%
Common Equity	100.0%	9.6%	9.6%
Weighted Average Cost of Capital			9.6%
Company Proposed Structure			
Debt	0.0%	9.4%	0.0%
Common Equity	100.0%	12.8%	12.8%
Weighted Average Cost of Capital			12.8%

[D] : [B] x [C]

Supporting Schedules: JCM-3 and JCM-4.

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2

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7 Testimony

Black Mountain Sewer Cost of Capital Calculation
Average Capital Structure of Sample Water Utilities

[A]	[B]	[C]	[D]
<u>Company</u>	<u>Debt</u>	<u>Common Equity</u>	<u>Total</u>
American States Water	52.9%	47.1%	100.0%
California Water	44.0%	56.0%	100.0%
Aqua America	54.3%	45.7%	100.0%
Connecticut Water	50.2%	49.8%	100.0%
Middlesex Water	52.0%	48.0%	100.0%
SJW Corp	<u>47.8%</u>	<u>52.2%</u>	<u>100.0%</u>
Average Sample Water Utilities	50.2%	49.8%	100.0%
Black Mtn - Actual Capital Structure ¹	21.6%	78.4%	100.0%

Source:

Sample Water Companies from Value Line

¹ The Capital Structure for ratemaking is 0.0 percent debt and 100.0 percent equity.

Black Mountain Sewer Cost of Capital Calculation
Growth in Earnings and Dividends
Sample Water Utilities

[A]	[B]	[C]	[D]	[E]
<u>Company</u>	Dividends Per Share 1998 to 2008 <u>DPS¹</u>	Dividends Per Share Projected <u>DPS¹</u>	Earnings Per Share 1998 to 2008 <u>EPS¹</u>	Earnings Per Share Projected <u>EPS¹</u>
American States Water	1.8%	5.1%	3.7%	10.9%
California Water	0.9%	2.8%	2.7%	6.9%
Aqua America	7.0%	5.0%	6.2%	11.4%
Connecticut Water	1.3%	No Projection	1.0%	No Projection
Middlesex Water	2.1%	No Projection	2.9%	No Projection
SJW Corp	5.5%	No Projection	3.0%	No Projection
Average Sample Water Utilities	3.1%	4.3%	3.4%	9.7%

¹ Value Line

Black Mountain Sewer Cost of Capital Calculation
Sustainable Growth
Sample Water Utilities

[A]	[B]	[C]	[D]	[E]	[F]
<u>Company</u>	Retention Growth 1999 to 2008 <u>br</u>	Retention Growth Projected <u>br</u>	Stock Financing Growth <u>vs</u>	Sustainable Growth 1999 to 2008 <u>br + vs</u>	Sustainable Growth Projected <u>br + vs</u>
American States Water	3.0%	6.3%	1.3%	4.4%	7.6%
California Water	2.0%	6.1%	4.0%	6.0%	10.1%
Aqua America	4.8%	5.7%	3.5%	8.2%	9.2%
Connecticut Water	2.6%	No Projection	0.8%	3.4%	No Projection
Middlesex Water	1.4%	No Projection	2.4%	3.8%	No Projection
SJW Corp	4.5%	No Projection	0.1%	4.6%	No Projection
Average Sample Water Utilities	3.0%	6.0%	2.0%	5.1%	9.0%

[B]: Value Line

[C]: Value Line

[D]: Value Line and MSN Money

[E]: [B]+[D]

[F]: [C]+[D]

Black Mountain Sewer Cost of Capital Calculation
Selected Financial Data of Sample Water Utilities

[A]	[B]	[C]	[D]	[E]	[F]	[G]
	Symbol	Spot Price 8/26/2009	Book Value	Mkt To Book	Value Line Beta β	Raw Beta β_{raw}
Company						
American States Water	AWR	33.85	18.52	1.8	0.80	0.67
California Water	CWT	37.90	20.89	1.8	0.80	0.67
Aqua America	WTR	17.28	9.11	1.9	0.65	0.45
Connecticut Water	CTWS	22.56	12.58	1.8	0.85	0.75
Middlesex Water	MSEX	15.36	10.83	1.4	0.80	0.67
SJW Corp	SJW	22.81	14.59	1.6	1.00	0.97
Average				1.7	0.82	0.70

[C]: Msn Money

[D]: Value Line

[E]: [C] / [D]

[F]: Value Line

[G]: $(-0.35 + [F]) / 0.67$

Black Mountain Sewer Cost of Capital Calculation
Calculation of Expected Infinite Annual Growth in Dividends
Sample Water Utilities

[A]	[B]
<u>Description</u>	<u>g</u>
DPS Growth - Historical ¹	3.1%
DPS Growth - Projected ¹	4.3%
EPS Growth - Historical ¹	3.4%
EPS Growth - Projected ¹	9.7%
Sustainable Growth - Historical ²	5.1%
<u>Sustainable Growth - Projected²</u>	<u>9.0%</u>
Average	5.8%

1 Schedule JCM-5

2 Schedule JCM-6

Black Mountain Sewer Cost of Capital Calculation
Multi-Stage DCF Estimates
Sample Water Utilities

[A]	[B]	[C]	[D]	[E]	[F]	[H]	[I]
Company	Current Mkt. Price (P_0) ¹ 8/26/2009	Projected Dividends ² (Stage 1 growth) (D_t)				Stage 2 growth ³ (g_n)	Equity Cost Estimate (K) ⁴
		d_1	d_2	d_3	d_4		
American States Water	33.9	1.01	1.07	1.13	1.20	6.7%	9.6%
California Water	37.9	1.21	1.28	1.36	1.44	6.7%	9.8%
Aqua America	17.3	0.56	0.60	0.63	0.67	6.7%	9.9%
Connecticut Water	22.6	0.94	1.00	1.05	1.11	6.7%	10.8%
Middlesex Water	15.4	0.74	0.78	0.83	0.88	6.7%	11.4%
SJW Corp	22.8	0.68	0.72	0.76	0.80	6.7%	9.6%

Average **10.2%**

$$P_0 = \sum_{t=1}^n \frac{D_t}{(1+K)^t} + \frac{D_n(1+g_n)}{K - g_n} \left[\frac{1}{(1+K)} \right]^n$$

Where : P_0 = current stock price

D_t = dividends expected during stage 1

K = cost of equity

n = years of non – constant growth

D_n = dividend expected in year n

g_n = constant rate of growth expected after year n

¹ [B] see Schedule JCM-7

² Derived from Value Line Information

³ Average annual growth in GDP 1929 - 2008 in current dollars.

⁴ Internal Rate of Return of Projected Dividends

BEFORE THE ARIZONA CORPORATION COMMISSION

KRISTIN K. MAYES

Chairman

GARY PIERCE

Commissioner

PAUL NEWMAN

Commissioner

SANDRA D. KENNEDY

Commissioner

BOB STUMP

Commissioner

IN THE MATTER OF THE APPLICATION OF)
BLACK MOUNTAIN SEWER COMPANY FOR)
AN APPROVAL INCREASE IN ITS WATER)
RATES)

DOCKET NO. SW-02361A-08-0609

DIRECT

TESTIMONY

OF

DOROTHY HAINS, P.E.

UTILITIES ENGINEER

ARIZONA CORPORATION COMMISSION

UTILITIES DIVISION

SEPTEMBER 21, 2009

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INTRODUCTION

Q. Please state your name and business address.

A. My name is Dorothy Hains. My business address is 1200 West Washington Street, Phoenix, Arizona 85007.

Q. By whom and in what position are you employed?

A. I am employed by the Arizona Corporation Commission ("Commission" or "ACC") as a Utilities Engineer - Water/Wastewater in the Utilities Division.

Q. How long have you been employed by the Commission?

A. I have been employed by the Commission since January 1998.

Q. What are your responsibilities as a Utilities Engineer - Water/Wastewater?

A. My main responsibilities are to inspect, investigate and evaluate water and wastewater systems. This includes obtaining data, preparing reconstruction cost new and/or original cost studies, cost of service studies and investigative reports, interpreting rules and regulations, and suggesting corrective action and providing technical recommendations on water and wastewater system deficiencies. I also provide written and oral testimony in rate cases and other cases before the Commission.

Q. How many companies have you analyzed for the Utilities Division?

A. I have analyzed more than 90 companies covering these various responsibilities for Utilities Division Staff ("Staff").

Q. Have you previously testified before this Commission?

A. Yes, I have testified on numerous occasions before this Commission.

1 **Q. What is your educational background?**

2 A. I graduated from the University of Alabama in Birmingham in 1987 with a Bachelor of
3 Science degree in Civil Engineering.

4
5 **Q. Briefly describe your pertinent work experience.**

6 A. Before my employment with the Commission, I was an Environmental Engineer for the
7 Arizona Department of Environmental Quality ("ADEQ") for ten years. Prior to that time,
8 I was an Engineering Technician with C. F. Hains, Hydrology in Northport, Alabama for
9 approximately five years.

10
11 **Q. Please state your professional membership, registrations, and licenses.**

12 A. I have been a registered Civil Engineer in Arizona since 1990. I am a member of the
13 American Society of Civil Engineering ("ASCE"), American Water Works Association
14 ("AWWA") and Arizona Water Association ("AWA").

15
16 **PURPOSE OF TESTIMONY**

17 **Q. What was your assignment in this rate proceeding?**

18 A. My assignment was to provide Staff's engineering evaluation of the subject Black
19 Mountain Sewer Company ("Black Mountain" or "Company") rate proceeding.

20
21 **Q. What is the purpose of your testimony in this proceeding?**

22 A. To present the findings of Staff's engineering evaluation of operations in the Company's
23 system. The findings are contained in the Engineering Report that I have prepared for this
24 proceeding. The report is included as Exhibit DMH-1 in this pre-filed testimony.

25

ENGINEERING REPORTS

Q. Would you briefly describe what was involved in preparing your Engineering Reports for this rate proceeding?

A. After reviewing the application, I physically inspected the system to evaluate its operation and to determine if any plant items were not used and useful. I contacted ADEQ to determine if the sewer system was in compliance with the ADEQ wastewater discharge permit requirements. After I obtained information from the Company regarding plant improvements, chemical testing expense and data of water usage, I analyzed that information. Based on the data, I prepared the attached Engineering Reports.

Q. Please describe the information contained in your Engineering Report.

A. The Report is divided into three general sections: 1) Executive Summary; 2) Engineering Report Discussion, and 3) Engineering Report Exhibit. The Discussions section for Black Mountain Sewer Company can be further divided into ten subsections: A) Introduction and Location of Company; B) Description of the Wastewater System; C) Wastewater Flow; D) Growth; E) ADEQ compliance; F) Arizona Corporation Commission Compliance, G) Depreciation Rates; J) Other Issues. These subsections provide information about the water system serving the Company.

RECOMMENDATIONS AND CONCLUSIONS

Q. What are Staff's recommendations and conclusions regarding the Company's operations?

A. Staff's recommendations and conclusions are as follows:

Recommendations

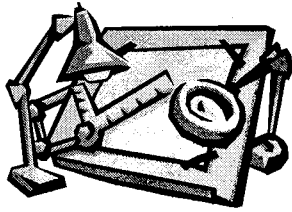
1. It is recommended that Black Mountain use depreciation rates as delineated in Figure 6.
2. Staff recommends denial of the Company proposed offsite Hookup Fee ("OFHF") tariff.
3. Staff recommends approval of the proposed pretreatment tariff in Figure 7.

Conclusions:

1. The Company is in full compliance with ADEQ for operation and maintenance, operator certification and discharge permit limit.
2. Staff concludes that the Company has adequate capacity.
3. The Company currently is in compliance with the ACC; a check with the Utilities Division Compliance Section showed no delinquent compliance items.

Q. Does this conclude your Direct Testimony?

A. Yes, it does.



**Engineering Report for Black Mountain
Sewer Corporation
Docket No. SW-02361A-08-0609
By Dorothy Hains**

September 18, 2009

EXECUTIVE SUMMARY

Conclusions

1. The Black Mountain Sewer Corporation ("Black Mountain" or "Company") is in full compliance with the Arizona Department of Environmental Quality ("ADEQ") for operation and maintenance, operator certification and discharge permit limit. (See §E of the report for discussion and details.)
2. Staff concludes that Black Mountain has adequate capacity. (See § C of the report for discussion and details.)
3. The Company currently is in compliance with the Arizona Corporation Commission ("ACC"); a check with the Utilities Division Compliance Section showed no delinquent compliance items. (See § F of the report for discussion and details.)

Recommendations

1. It is recommended that Black Mountain use depreciation rates as delineated in Figure 6. (See § G and Figure 6 of the report for discussion and details.)
2. Staff recommends denial of the Company proposed offsite Hookup Fee ("OFHF") tariff. (See § H of the report for discussion and details.)
3. Staff recommends approval of the proposed pretreatment tariff in Figure 7. (See § H of the report for discussion and details.)
4. Staff recommends \$14,362 annually in testing costs. (See § H of the report for discussion and details.)

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A. LOCATION OF COMPANY

Black Mountain ("Black Mountain" or "Company") provides service to an area of land approximately one and three quarter square miles in size. The area served is partially annexed to both the Town of Cave Creek and the Town of Carefree, north of the City of Phoenix in Maricopa County. Figure 1 describes the CC&N area of Black Mountain, and Figure 2 describes the location of the Company within Maricopa County.

B. DESCRIPTION OF THE WASTEWATER SYSTEM

Black Mountain owns and operates Boulders Carefree ("Boulders") wastewater treatment plant ("WWTP"), and a sewer collection system that delivers raw sewage to both the Boulders WWTP and to a City of Scottsdale ("Scottsdale") WWTP for treatment (further discussion follows). The Black Mountain sewer facilities were visited on February 25, 2009, by Dorothy Hains, Utilities Engineer, accompanied by Company representative, Charlie Hernandez (Business Manager for Algonquin Water Services' East Valley Group) and Dan Schanaman (Operation Manager for Algonquin Water Services).

Boulders WWTP and North/West System

The North/West System consists of eight lift stations and the Boulders WWTP. This system serves approximately 880 customers. Boulders WWTP, a 120,000 gallon per day ("GPD") extended aeration WWTP contains a bar screen, four parallel trains of extended aeration basins, sand filter, disinfection device and effluent lift station. Final treated effluent is disposed on a golf course for irrigation use. When wastewater flow exceeds 120,000 GPD, excess wastewater capacity is diverted through a bypass line and discharges into a collection line to the Scottsdale WWTP.

Scottsdale WWTP and South System

On January 21, 1996, Scottsdale and the Company signed a service agreement ("Scottsdale Agreement") that expires on December 31, 2016. In this agreement Scottsdale agrees to treat and to dispose of the wastewater from Black Mountain Certificate of Convenience and Necessity ("CC&N") area. On April 1, 1996 Scottsdale signed Agreement No. 960058 with the Company. In this Agreement, Scottsdale agreed to accept up to 1,000,000 GPD sewage flow from the Company. According to the Company, over 670,000 GPD were delivered to Scottsdale in February 2005 when the peakday flow occurred. The South System consists of eight lift stations serving approximately 1,250 customers.

Figure 3A and 3B are system schematic drawings of the two Black Mountain systems with detailed plant facility descriptions as follows:

Table 1 Wastewater Treatment Plant and Scottsdale Connection

Name or Description	Plant Items	Location
North/West System Boulders WWTP	160,000 GPD extended aeration (designed). Operating at 120,000 GPD (permitted)	Boulders Resort
South System Scottsdale WWTP and interconnection	Metered – could purchase up to 1.0 Million GPD	Scottsdale Road & Dove Valley Road

Active Lift Stations in North System

Location	No. Pumps	Pump (in HP)	Capacity (in gallons per minute per pump)	Wet Well Capacity (in gallons)
Quartz Valley LS (@Quartz Valley & Boulder Dr.)	2	3	100	705
Indian Rock LS (@1508 Indian Rock 10950 W Union Hills)	2	5.3	100	470
Sage Brush LS (@2212 Sage Brush)	2	3	50	940
Indian Basket LS (@1256 E Indian Basket)	2	1	11	150
Peaceful Place LS (@36209 Peaceful Place)	2	3	15	1,174
Commercial LS (@Spanish Village Tom Darlington Dr/E Cave Creek Rd)	2	23	200	1,130
Ridgeview LS (@7044 Ridgeview)	2	5	100	1,691
Trade Center LS (@7155 E Cave Creek Rd)	2	10	185	2,584

Active Lift Stations in South System

Location	No. Pumps	Pump (in HP)	Capacity (in gallons per minute per pump)	Wet Well Capacity (in gallons)
New River (Canyon Crossings) LS (@35798 N Cave Creek Rd)	2	3	85	1,691
Sentinel Rock LS (@35425 N Cave Creek Rd)	2	15	370	1,500
Carefree Village LS (@34802 N Cave Creek Rd)	2	3	85	1,760
Sunset Trail LS (@35029 Sunset Trail)	2	30	290	2,600
Carefree HWY LS (@6332 Carefree	2	25	350	1,525

HWY)				
Stagecoach Pass LS (@6800 E Stagecoach Pass)	2	5	50	2,202
El Pedregal LS (@34217 N Scottsdale Rd)	2	10	185	2,000

Abandoned Lift Stations

Location	No. Pumps	Pump (in HP)	Capacity (in gallons per minute per pump)	Wet Well Capacity (in gallons)	Year (abandoned)
Trade Center LS (@ Cave Creek Rd/Tom Darlington Rd)	2	¾	N/A	200	2005
CIE LS (@7806 Carefree Circle)*	2	15	200	4,200	2006

* Note: In Decision # 69164, the Commission ordered the Company to solve the odor problem from CIE Lift Station. The Company chose to close this lift station to resolve the odor problem in 2006.

Force Mains

Size (in inches)	Material	Length (in feet)
1¼	polyvinyl chloride ("PVC")	443
1½	PVC	5,384
2	PVC	5,155
3	Asbestos Cement Pipe ("ACP"),	915
4	PVC	2,390
4	ACP	9,366
4	Ductile Iron pipe ("DIP")	3,000
6	ACP	2,584
6	PVC	10,353
6	DIP	1,135
8	PVC	10,426

Collection Mains

Size (in inches)	Material	Length (in feet)
4	Acrylonitrile Butadiene Styrene ("ABS")	1,263
6	Vitrified Clay pipe ("VCP")	12,760
6	PVC	3,046
6	DIP	85
8	VCP	71,673
8	PVC	90,059
8	DIP	1,280
10	VCP	7,675
10	PVC	3,455

12	ABS	9,346
12	PVC	565
15	VCP	1,900
15	PVC	6,755
15	DIP	165
18	Cast Iron Pipe ("CIP")	130
21	CIP	74

Manholes ("MH") & Cleanouts

Type	Quantity
Standard MH	1,074
Drop MH	14
Cleanouts	30

Service Laterals

Diameter	Material	Length (Feet)
4-inch		2,326
6-inch	:	21
	Total	2,347

C. WASTEWATER FLOW

North/West System

Table 2 below summarizes the Boulders wastewater flow data during the test year of July 2007 through June 2008 and Figure 4A is a graphic illustration of the same flow data. The daily average flow for the peak month was 124,286 GPD in February and the peak day flow occurred in January when 365,000 GPD flow was recorded.

**Table 2 Wastewater Flow
(Boulders WWTP)**

Month	Number of Customers	Total Volumes of Treated Wastewater (gallons/month)	Daily Average Flow (gallons/day)	Peak Day flow (gallons)	Daily Average Flow (GPD/c)	Peak Day flow (GPD/c)
Jul 07	870	3,720,000	120,000	185,000	138	213
Aug 07	871	3,179,000	102,548	293,000	118	336
Sep 07	872	3,600,000	120,000	181,000	138	208
Oct 07	872	3,720,000	120,000	183,000	138	210
Nov 07	872	2,821,000	94,033	187,000	108	214
Dec 07	873	3,720,000	120,000	205,000	137	235
Jan 08	874	3,720,000	120,000	365,000	137	418

Feb 08	875	3,480,000	124,286	242,000	142	277
Mar 08	875	3,720,000	120,000	217,000	137	248
Apr 08	875	3,540,000	118,000	193,000	135	221
May 08	876	3,217,000	103,774	168,000	118	192
Jun 08	876	3,573,000	119,100	175,000	136	200
Avg					132	236

South System

Table 3 below summarizes the Scottsdale wastewater flow data during the test year of July 2007 through June 2008 and Figure 4B is a graphic illustration of the same flow data. The average daily flows experienced the highest flow of 392,464 GPD in February.

**Table 3 Wastewater Flow
(To Scottsdale WWTP)**

Month	Number of Customers	Total Volumes of Treated Wastewater (gallons/month)	Daily Average Flow (gallons/day)	Daily Average Flow (GPD/c)
Jul 07	1,237	5,792,000	186,839	151
Aug 07	1,238	7,000,000	225,806	182
Sep 07	1,238	6,334,000	211,133	171
Oct 07	1,238	8,800,000	283,871	229
Nov 07	1,240	9,330,000	311,000	251
Dec 07	1,241	7,842,000	252,968	204
Jan 08	1,242	9,500,000	306,452	247
Feb 08	1,244	10,989,000	392,464	315
Mar 08	1,244	11,195,000	364,355	293
Apr 08	1,244	9,604,000	320,133	257
May 08	1,244	7,134,000	230,129	185
Jun 08	1,246	5,633,000	187,767	151
Average				220

Staff concludes that the Company has adequate capacity to serve its existing customers and projected growth through 2012.

D. GROWTH

Based on the service connection data in the Company's annual reports, the number of customers served by Black Mountain increased from 1,295 to 2,130 between December 1999 and December 2008, with an average growth rate of 34 customers per year for the period. Based on the linear regression analysis, the Company could have approximately 2,270 customers by the end of 2012. The following table summarizes actual and projected growth in the Company's existing certificated service area.

Table 4 Actual and Projected Growth in Black Mountain Sewer Service Area

Year	Nos. of Customers	
1999	1,295	Reported
2000	1,429	Reported
2001	1,672	Reported
2002	1,730	Reported
2003	1,794	Reported
2004	1,923	Reported
2005	2,043	Reported
2006	2,020	Reported
2007	2,111	Reported
2008	2,130	Reported
2009	2,160	Estimated
2010	2,194	Estimated
2011	2,228	Estimated
2012	2,262	Estimated

E. ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY COMPLIANCE

Black Mountain Sewer Systems

Arizona Department of Environmental (“ADEQ”) regulates the Black Mountain Sewer systems under Aquifer Protection Permit (“APP”) No. 11175. Per the February 9, 2009 Compliance Status Report issued by ADEQ, the Boulders WWTP is in full compliance with agency requirements for operation and maintenance, operator certification and discharge permit limits.

Scottsdale WWTP

ADEQ regulates the Scottsdale WWTP under APP Permit No. 102633. Per the April 29, 2009 Compliance Status Report issued by ADEQ, the Scottsdale WWTP is in full compliance with agency requirements for operation and maintenance, operator certification and discharge permit limits.

F. ARIZONA CORPORATION COMMISSION (“ACC”) COMPLIANCE

A check with the Utilities Division Compliance Section showed no delinquent compliance items.

G. DEPRECIATION RATES

Decision No. 69164 (dated December 5, 2006) approved the depreciation rates used by Black Mountain in this rate proceeding except that the Company reorganized the authorized rates utilizing the National Association of Regulatory Commissioners’ (“NARUC”) latest plant account matrix as presented in Figure 6.

Staff recommends that the depreciation rates presented in Figure 6 by NARUC account be used.

H. OTHER ISSUES

1. Offsite Hookup Fee Tariff ("HUF Tariff")

The Company estimates a total of 3,923 connections by 2027 based on the Company's 2008 Master Plan. The Company requests that a hook-up fee apply to new connections. Under the proposal the fee amount would be based on expected flow that would be generated by each new connection. Staff has estimated that total flow will reach approximately 957,212 GPD by 2027. Staff's estimate is based on the Company's maximum daily average flow of 244 GPD per connection during the test year multiplied by the total of 3,923 connections. The Company currently has 1,120,000 GPD of treatment capacity which represents the combined capacity of 120,000 GPD from the Boulders plant and 1,000,000 GPD from Scottsdale. Staff concludes that the Company has adequate treatment capacity to handle projected growth. Therefore, Staff recommends denial of the Company's Offsite Hookup Fee Tariff request.

2. Chemical Testing Expenses

Table 5 below is Staff's calculation of annual test expenses based on the Company's APP monitoring requirements and the monitoring requirements in the Scottsdale Agreement. Staff's total estimated testing expense is \$14,362 annually.

Table 5 Wastewater Testing Cost for Boulders WWTP (per Permit Monitoring Requirement in APP No. P11175)

	Cost per test	No. of tests per year	Annual Cost
Fecal Coliform – daily	\$15	365	\$5,475
Total Nitrogen (effluent) - monthly	\$52	12	\$624
Fluoride (effluent) - quarterly	\$16	4	\$64
Cyanide (effluent) – quarterly	\$56	4	\$224
Antimony (effluent) – quarterly	\$16.80	4	\$67
Arsenic (effluent) – quarterly	\$16.80	4	\$67
Volatile Organic Compound's (effluent) – Semi-annually	\$625	2	\$1,250

Enteric Virus - monthly	\$460	12	\$5,520
Turbidity - daily	\$0*	365	\$0
Barium (effluent) – quarterly	\$10	4	\$40
Beryllium (effluent) – quarterly	\$10	4	\$40
Cadmium (effluent) – quarterly	\$15	4	\$40
Chromium (effluent) – quarterly	\$10	4	\$40
Lead (effluent) – quarterly	\$15	4	\$60
Mercury (effluent) – quarterly	\$32	4	\$128
Nickel (effluent) – quarterly	\$10	4	\$40
Selenium (effluent) – quarterly	\$15	4	\$60
Thallium (effluent) – quarterly	\$15	4	\$60
ICP digestion	\$16	1	\$16
ICP-MS digestion	\$15	1	\$15
Total			\$13,830

**Table 6 Wastewater Testing Cost per Service Agreement Monitoring Requirement
(Scottsdale – Agreement No.960058)**

	Cost per test	No. of tests per year	Annual Cost
BOD ₅ - 7 samples/quarterly	\$36	28	\$168
TSS - 7 samples/quarterly	\$13	28	\$364
Total			\$532

* The Company uses on-site auto turbidity meter to measure this parameter.

Staff recommends annual testing expenses be adjusted for purposes of this rate case to Staff's estimated annual expense amount of \$14,362.

3. Pretreatment Tariff

The Company requests approval of a Pretreatment Tariff in this rate application. The proposed Tariff sets forth certain waste limitations and pretreatment standards that apply based on the class of commercial/industrial customer served by the Company. The tariff, if approved, will govern the type and quality of waste discharged into the Company's wastewater collection system and treated at its wastewater treatment facility. The Company modeled its proposed Pretreatment Tariff after Scottsdale's Pretreatment Program. Staff has reviewed the Company's proposed tariff and recommends approval of the tariff which is attached as Figure 7.

FIGURES

Figure 1

BLACK MOUNTAIN SEWER CERTIFICATED AREA

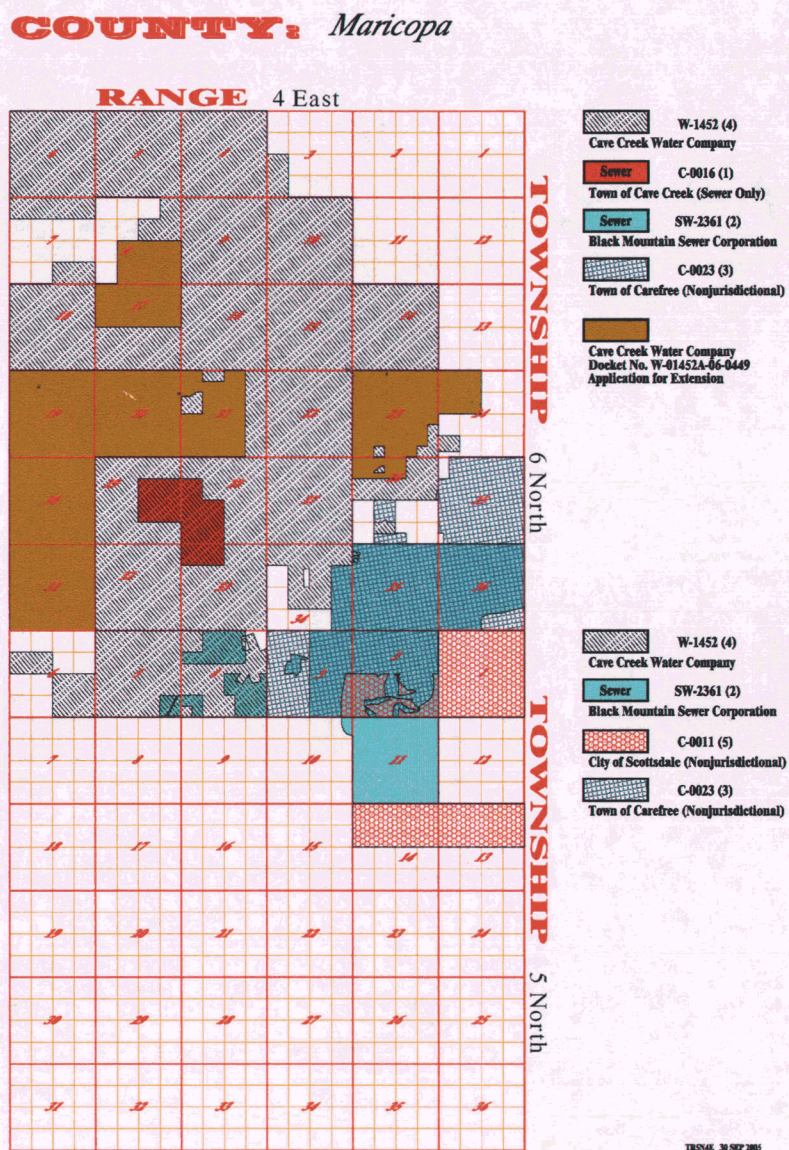
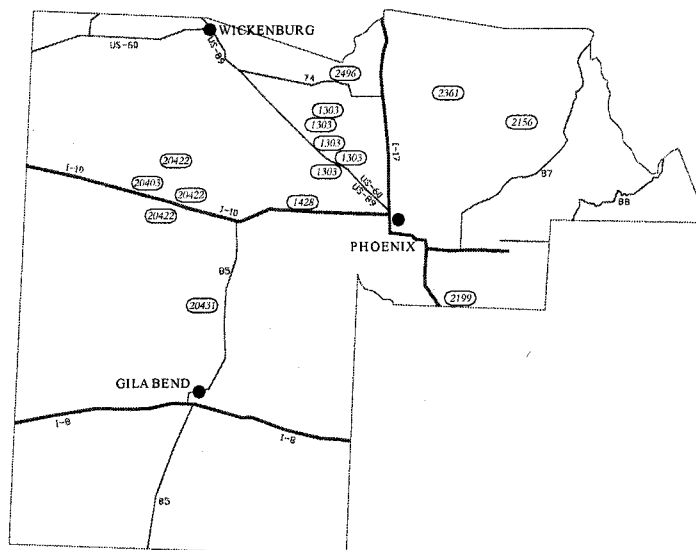


Figure 2

LOCATION OF BLACK MOUNTAIN SEWER DIVISION

MARICOPA COUNTY (SEWER)



(1303) ARIZONA-AMERICAN WATER COMPANY
(20403) BALTERRA SEWER CORPORATION
(2361) BLACK MOUNTAIN SEWER CORPORATION
(20431) GREEN ACRES SEWER, LLC
(20422) HASSAYAMPA UTILITY COMPANY, INC.

(2496) LAKE PLEASANT SEWER COMPANY
(1428) LITCHFIELD PARK SERVICE COMPANY
(2199) PIMA UTILITY COMPANY
(2156) RIO VERDE UTILITIES, INC.

FIGURE 3A
BLACK MOUNTAIN SEWER SYSTEMATIC FLOW DIAGRAM

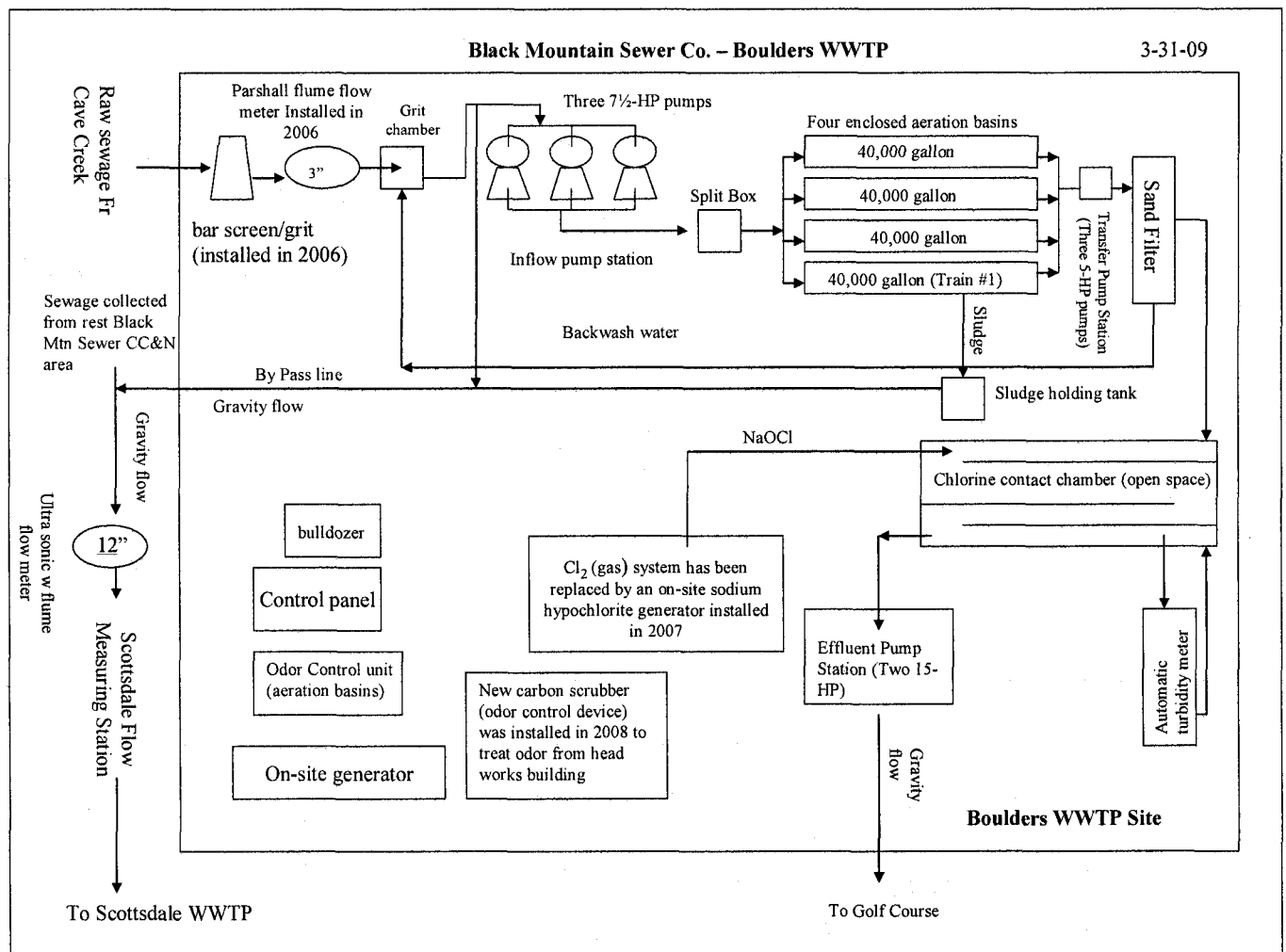


FIGURE 3B

BLACK MOUNTAIN SEWER SYSTEMATIC FLOW DIAGRAM

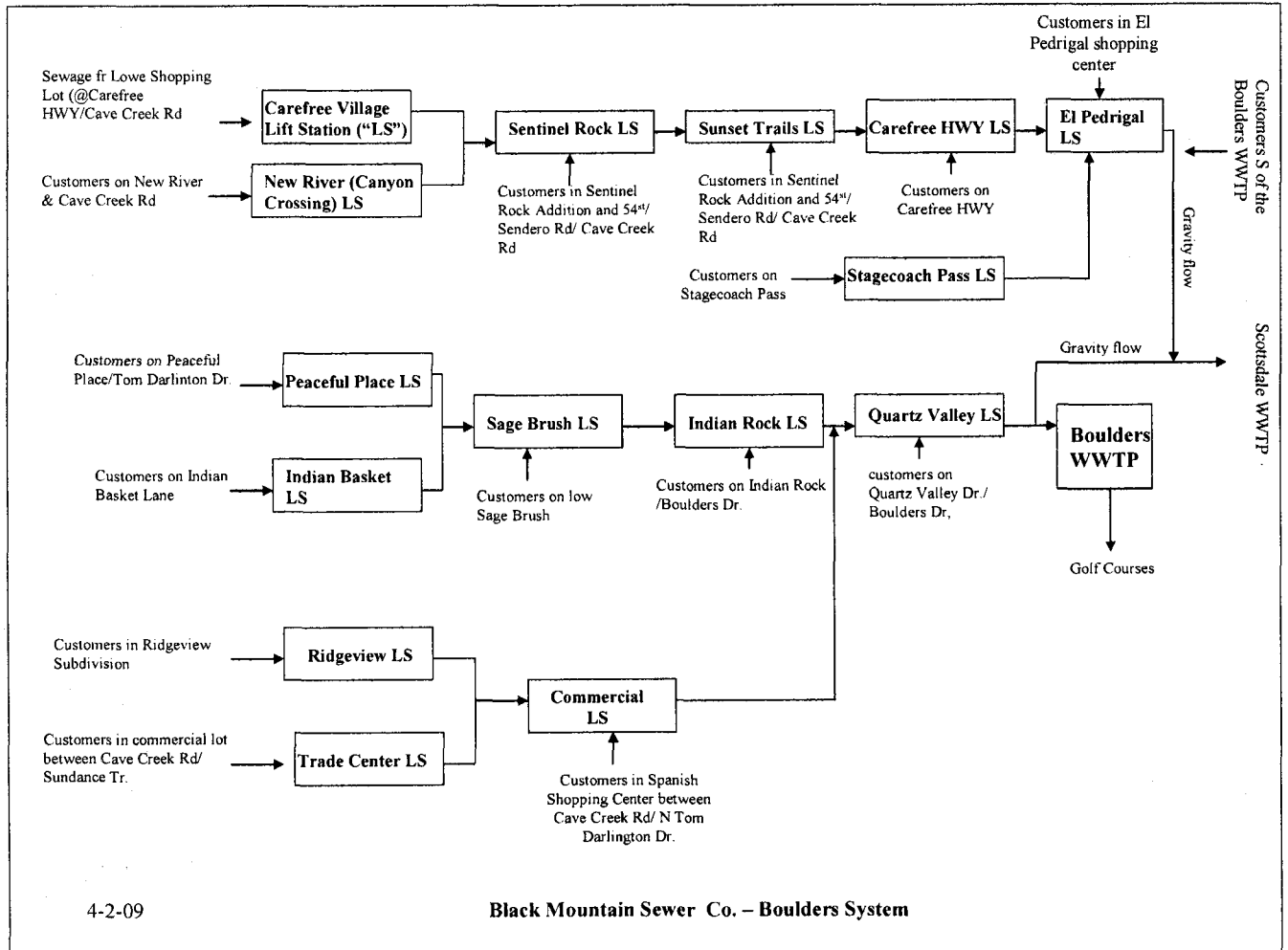


FIGURE 3C

BLACK MOUNTAIN SEWER SYSTEMATIC FLOW DIAGRAM

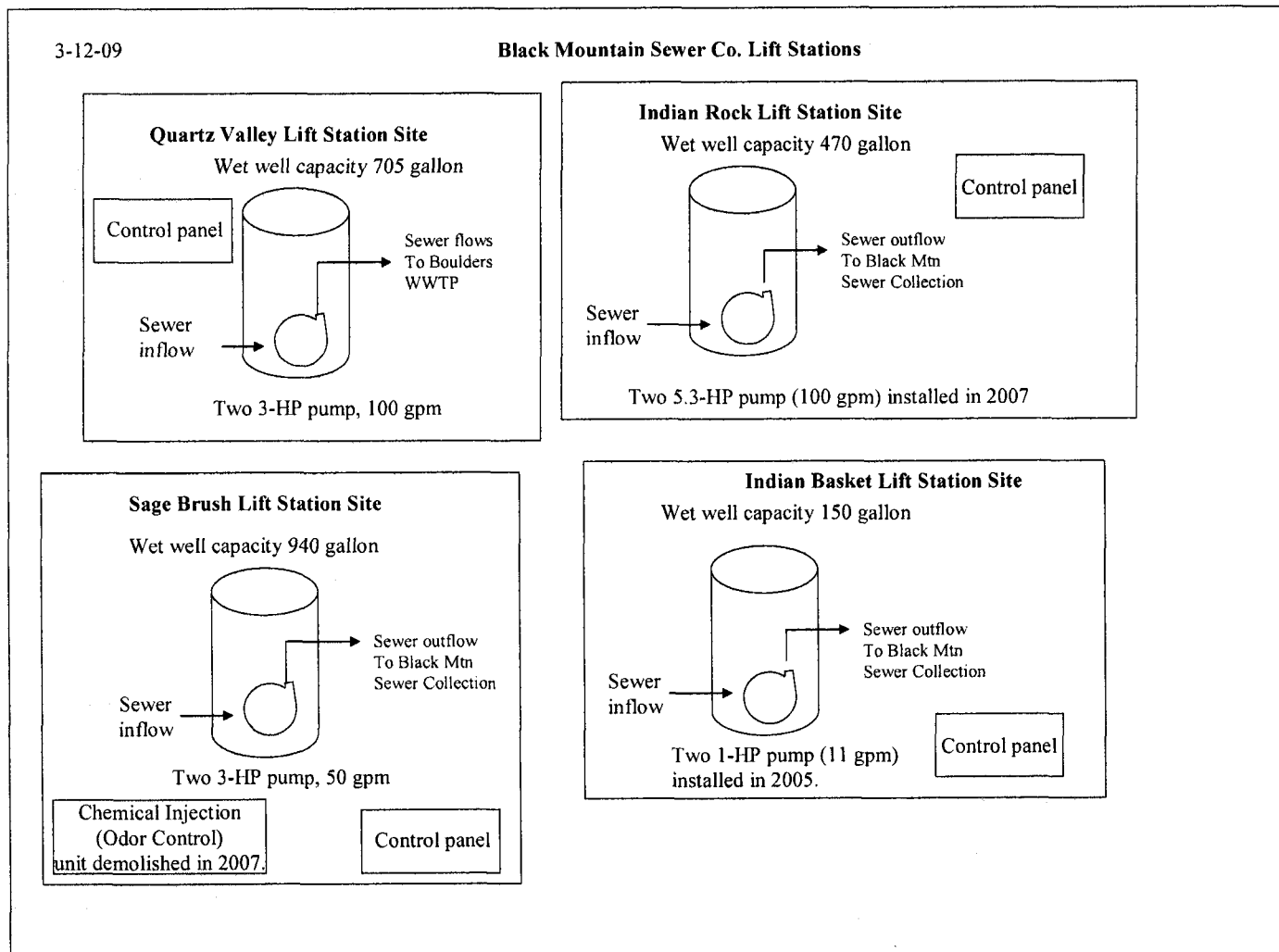


FIGURE 3 D

BLACK MOUNTAIN SEWER SYSTEMATIC FLOW DIAGRAM

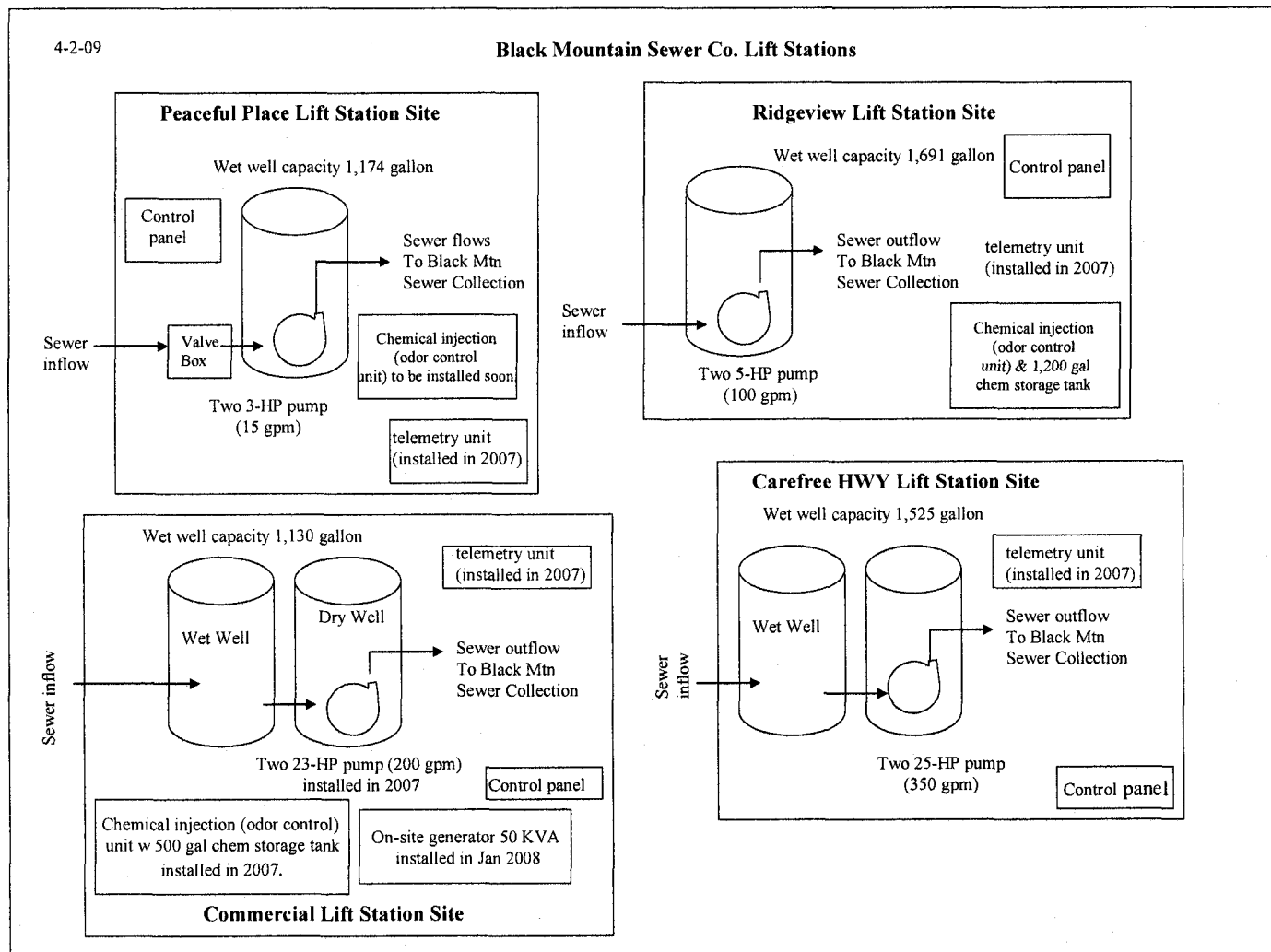


FIGURE 3 E

BLACK MOUNTAIN SEWER SYSTEMATIC FLOW DIAGRAM

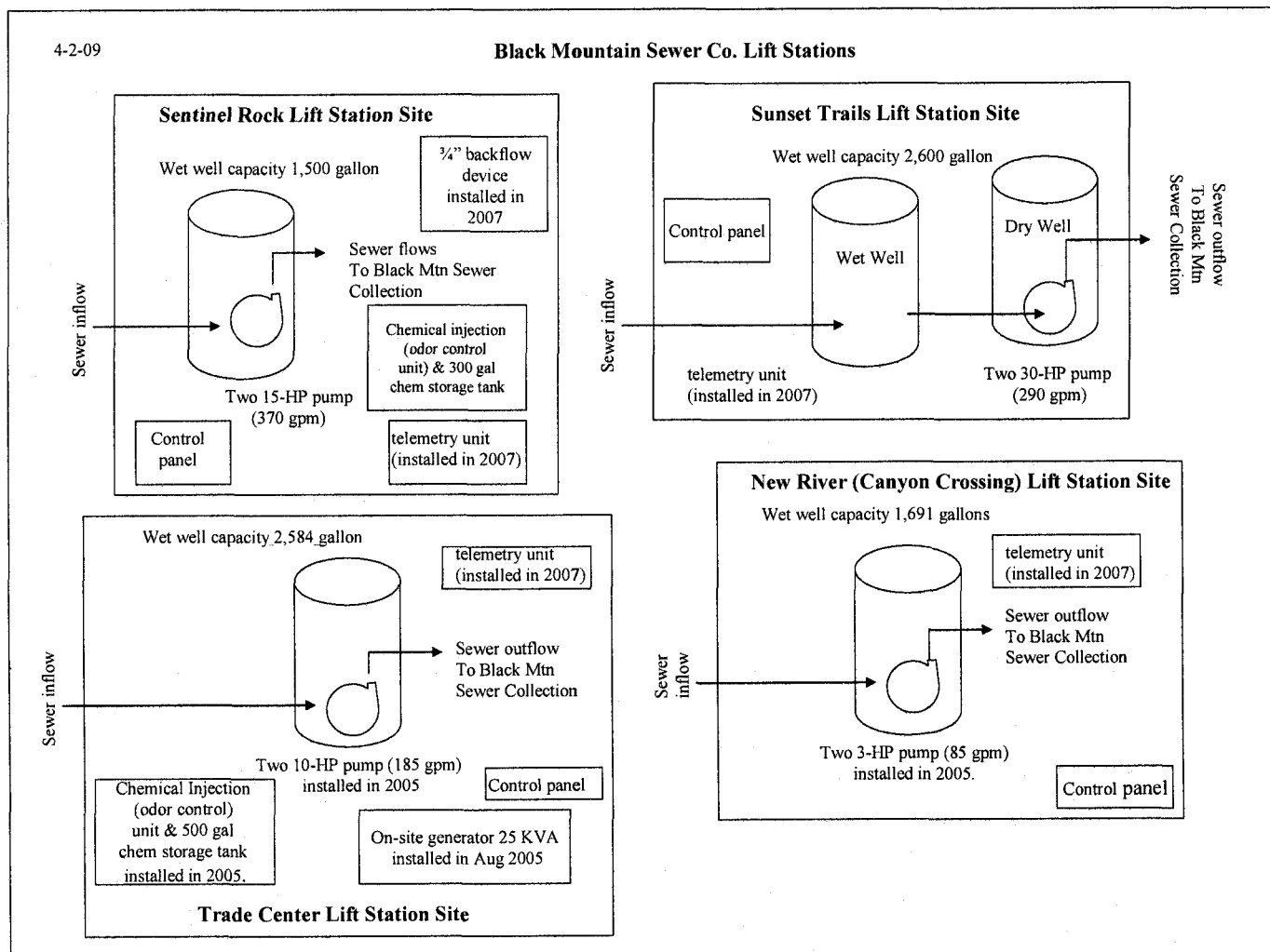


FIGURE 3 F

BLACK MOUNTAIN SEWER SYSTEMATIC FLOW DIAGRAM

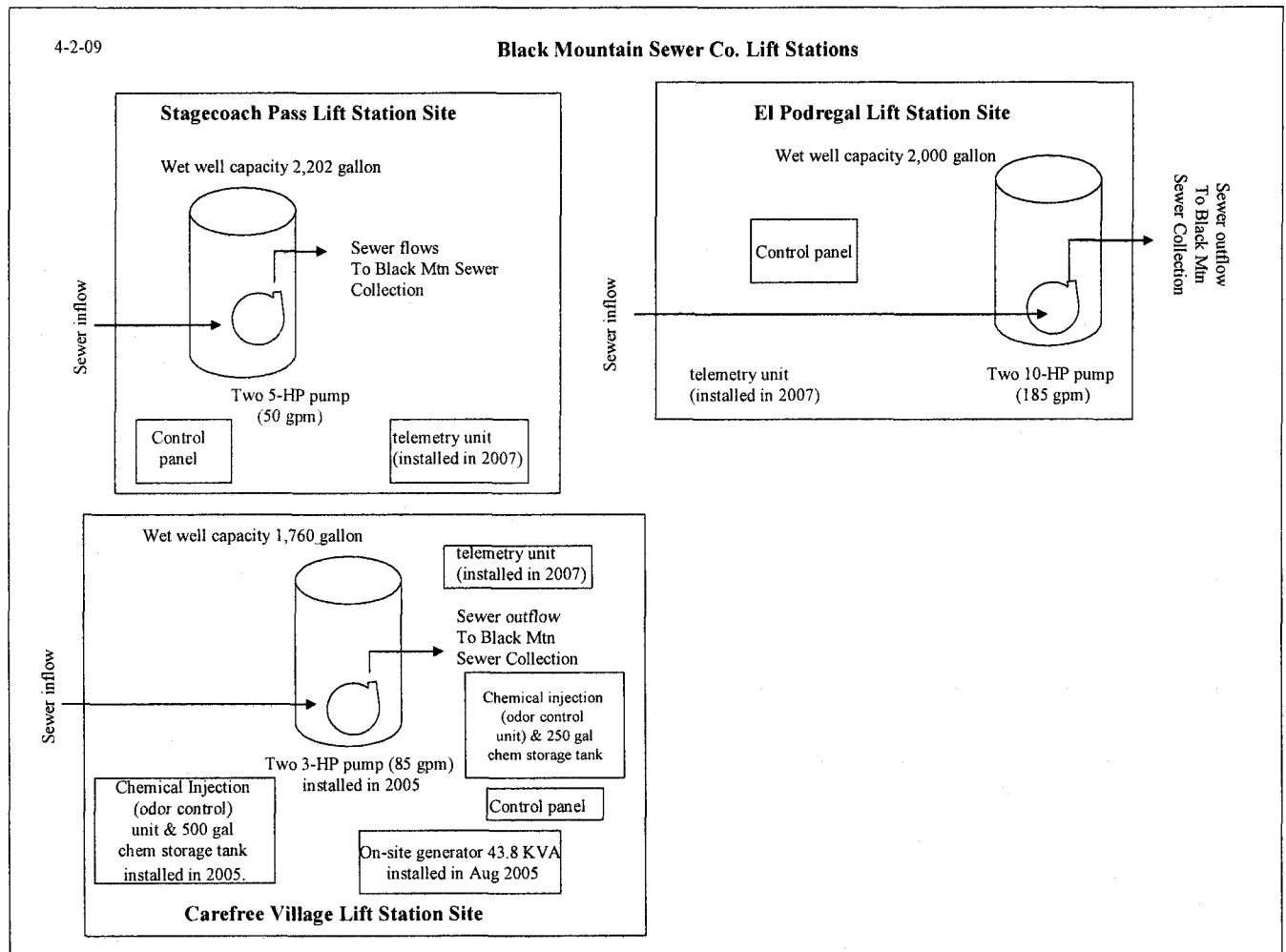


FIGURE 3 G

BLACK MOUNTAIN SEWER SYSTEMATIC FLOW DIAGRAM

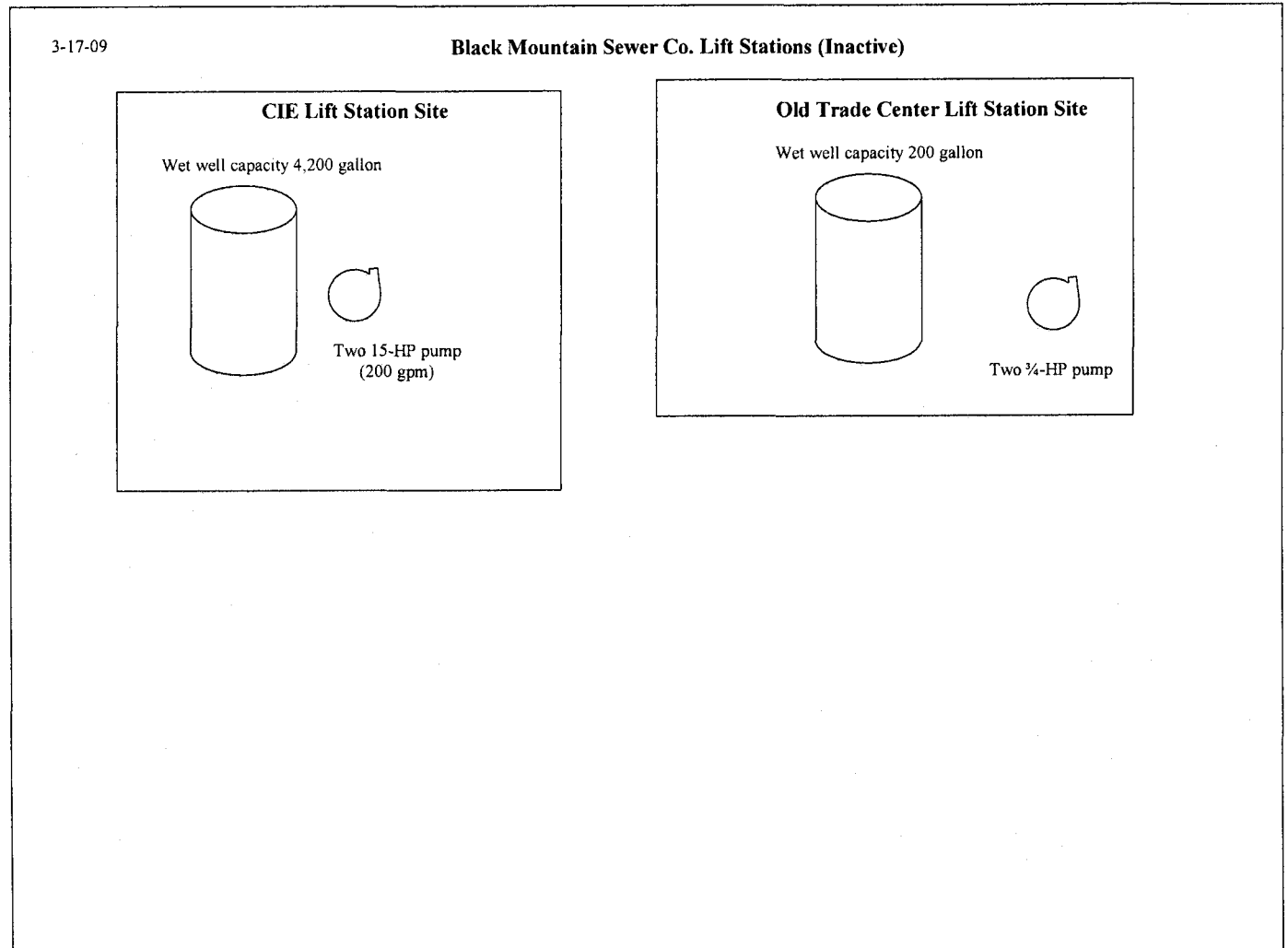


FIGURE 4A

**WASTEWATER FLOW FROM BLACK MOUNTAIN NORTH/WEST SYSTEM
SERVICE AREA**

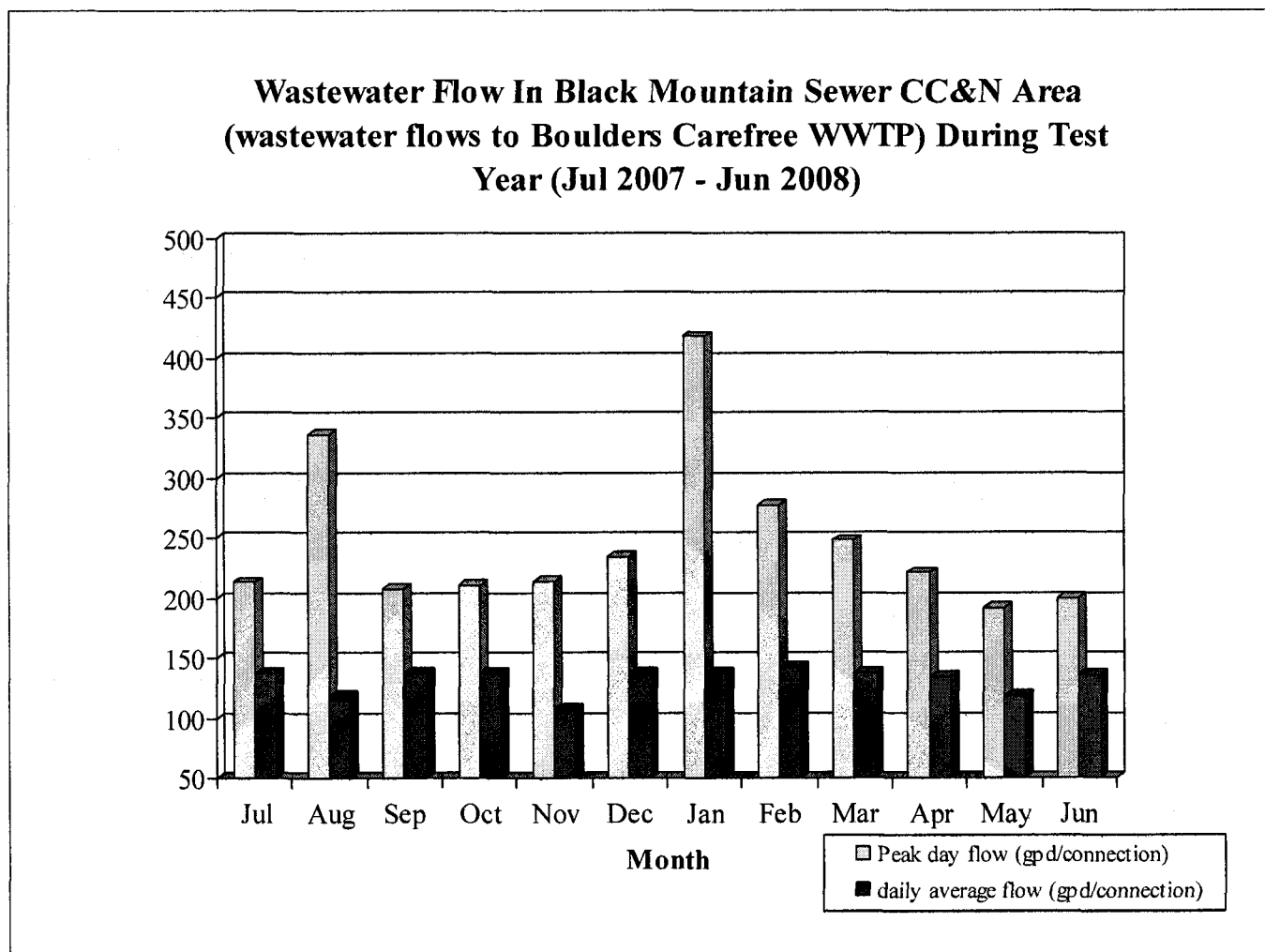


FIGURE 4B

**WASTEWATER FLOW FROM BLACK MOUNTAIN SOUNTH SYSTEM SERVICE
AREA**

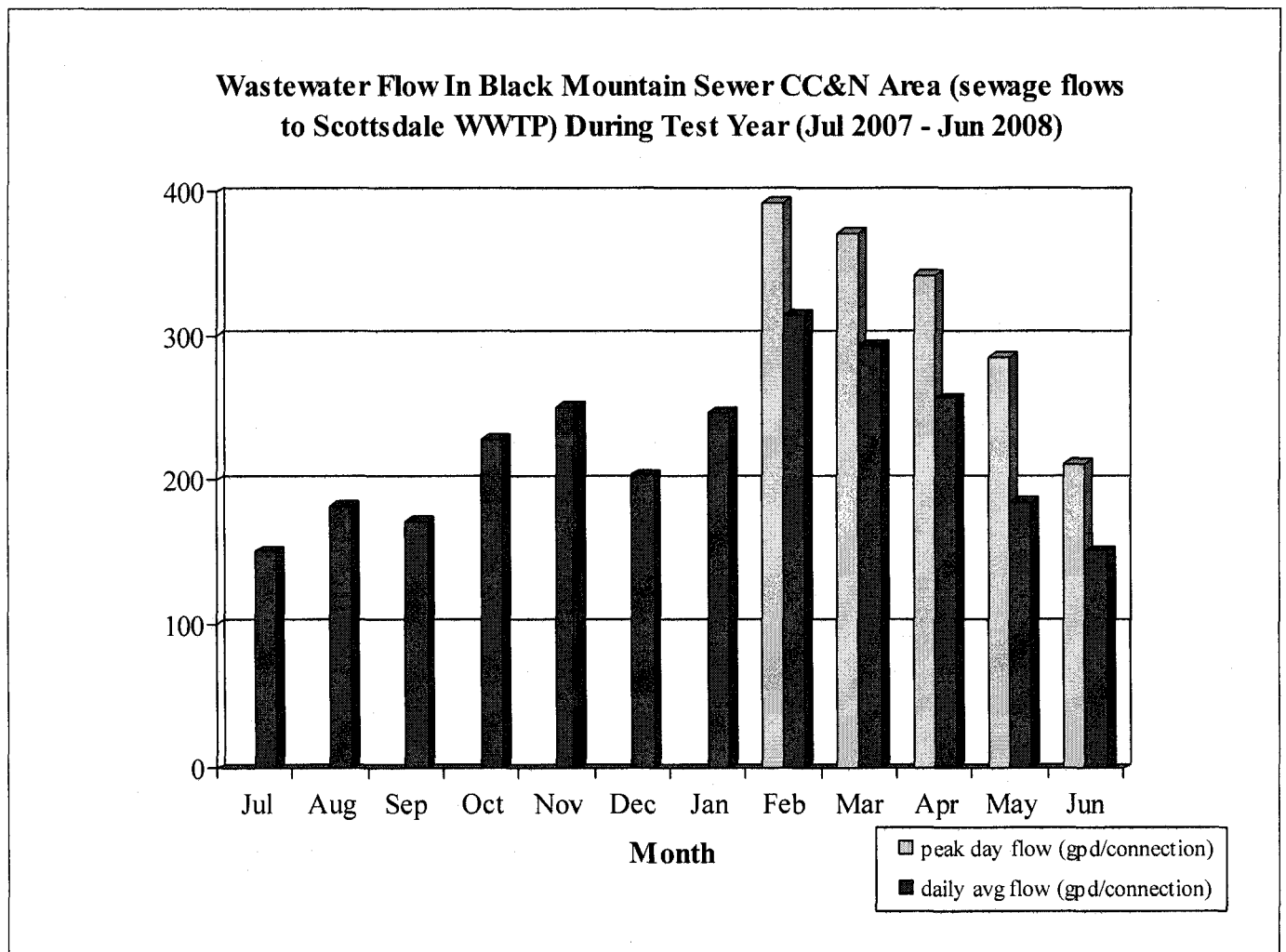


FIGURE 5
PROJECTED AND ACURATE GROWTH IN BLACK MOUNTAIN

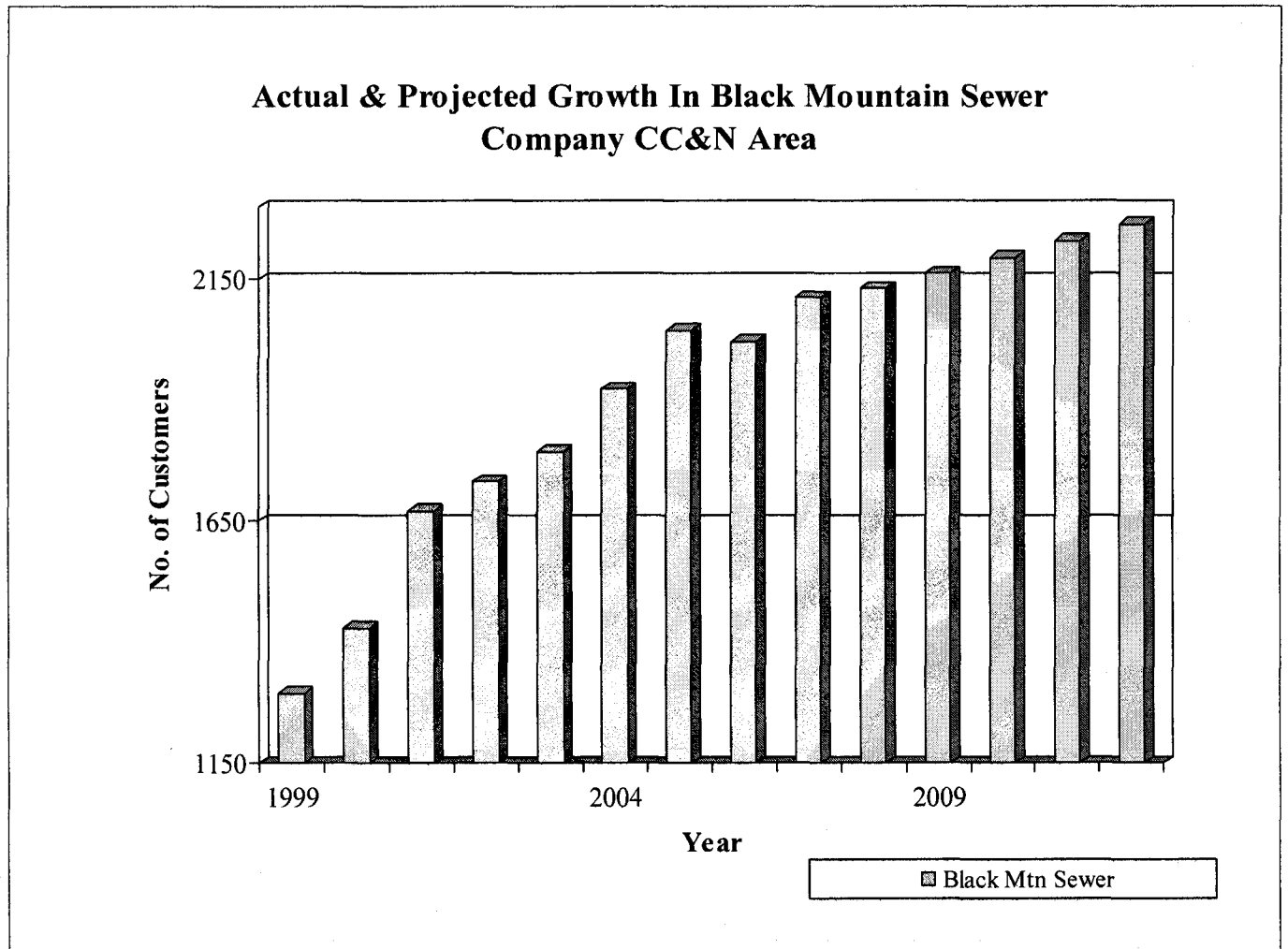


Figure 6 Depreciation Rates for Black Mountain Sewer Co.

NARUC Acct #	Depreciable Plant	Decision #69164	Co. Proposed Rate (%)	Staff Recommended Rate (%)
351	Organization	0.00	0	0
352	Franchises	0.00	0	0
353	Land & Land Rights	0.00	0	0
354	Structure & Improvements	3.33	3.33	3.33
355	Power Generation Equipment	5.00	5.00	5.00
360	Collection Sewers - Force	2.00	2.00	2.00
361	Collection Sewers - Gravity	2.00	2.00	2.00
362	Special Collection Structures	2.00	2.00	2.00
363	Service to Connections	2.00	2.00	2.00
364	Flow Measuring Devices	10.00	10.00	10.00
365	Flow Measuring Installations	10.00	10.00	10.00
366	Reuse Services	2.00	N/A	2.00
367	Reuse Meters & Meter Installations	8.33	N/A	8.33
370	Receiving Wells	3.33	3.33	3.33
371	Pump Equipment	12.50	12.50	12.50
374	Reuse Distribution Reservoirs	2.5	N/A	2.50
375	Reuse Transmission and Distribution System	2.5	N/A	2.00
380	Treatment & Disposal Equipment	5.00	5.00	5.00
381	Plant Sewers	5.00	5.00	5.00
382	Outfall Sewer Lines	3.33	3.33	3.33
389	Other Plant & Misc Equipments	6.67	6.67	6.67
390	Office Furniture & Equipments	6.67	6.67	6.67
390.1	Computer & Software	20.00	N/A	20.00
391	Transportation Equipments	20.00	20.00	20.00
392	Store Equipment	4.00	N/A	4.00
393	Tools, Shop, Garage Equipments	5.00	5.00	5.00
394	Lab Equipments	10.00	10.00	10.00
395	Power Operated Equipment	5.00	5.00	5.00
396	Communication Equipment	10.00	10.00	10.00
397	Miscellaneous Equipment	10.00	N/A	10.00
398	Other plants	---	10.00	10.00

FIGURE 7

PRE-TREATMENT TARIFF

PURPOSE

The purpose of this tariff is to enable **Black Mountain Sewer Company** ("Company") to set forth certain waste limitations and pretreatment standards that apply based on the class of commercial/industrial customer served by the Company's Wastewater Treatment Facilities, located in Maricopa County, Arizona. Customer classes include dental offices, dry cleaners, food service establishments, photo imaging operations, Recreational Vehicle Parks and pretreatment for industrial wastes. This tariff will govern the type and quality of waste discharged into the Company's wastewater collection system and treated at its wastewater treatment facilities.

Because some of the Company's wastewater is treated by the City of Scottsdale, this tariff incorporates pretreatment standards consistent with the City of Scottsdale guidelines, which meet applicable Federal and State standards. In addition, the Company has a Code of Practice guideline attached to this tariff.

REQUIREMENTS

The requirements of this tariff, which are governed by Rules of the Arizona Corporation Commission ("Commission"), specifically A.A.C. R14-2-603, -605, -607, and -609, the United States Environmental Protection Agency, and the Arizona Department of Environmental Quality, are as follows:

1. Any customer disposing of industrial waste considered as hazardous under this tariff shall notify the Company in writing of any discharge into the Company's collection system. The specific information for the reporting and time-frame requirement to be submitted to the Company is 180 days per 40 CFR §403.12 (p)
2. The Company may require monitoring equipment facilities, at the customer's expense, to allow inspection, sampling, and flow measurement of any discharges as necessary to determine compliance with this tariff.
3. Subject to the provisions of A.A.C. R14-2-603, -607 and -609, the Company may terminate service or may deny service to a customer who fails to meet the pretreatment standards or to permit the inspecting and sampling of any discharge as required by this tariff.
4. The Company may suspend wastewater treatment service, in accordance with A.A.C. R14-2-609.(B) (without notice), when such suspension is necessary, in the opinion of the Company, in order to stop an actual or threatened discharge which presents or may present an imminent or substantial endangerment to the health or

welfare of persons, to the environment, or causes the Company to violate any condition of its aquifer protection permit.

5. The Company shall give any new customer who is required to meet the pretreatment standards written notice of said requirement and shall be given a complete copy of this tariff and all attachments.
6. Any existing customer found to be in violation of this tariff shall be given written notice of such violation and a complete copy of this tariff with all attachments. If A.A.C. R14-2-609.(B).(1). is **not** applicable, the customer shall be given thirty (30) days from the time such written notice is received to comply with this notice. If the customer can show good cause as to why the pretreatment standards cannot be met within thirty (30) days, the Company may, at its sole discretion, allow a customer an additional thirty (30) days to have the pretreatment standards met.
7. Consistent with the provisions of A.C.C. R14-2-607.(B).(1) and (2), each customer shall be responsible for maintaining and safeguarding all Company property installed on the customer's premises for the purpose of supplying utility service to that customer.

Attachment – Company's Code of Practice Guideline (32 page)

Websites:

Arizona Administrative Code (A.A.C.) Title 18, Chapter 9

www.azsos.gov/public_services/table_of_contents.htm

Under this webpage, go to "Title 18" and click on Chapter 9 ("Department of Environmental Quality – Water Pollution Control"). Then go to Section "R18-9-A906".

City of Scottsdale:

www.scottsdaleaz.gov/water/quality/pretreatment.asp

Code of Federal Register (CFR) 40 CFR:

www.epa.gov/lawsregs/search/40cfr.html

Under this webpage, click on "Chapter I", click on "Volume 28 & Browse Parts 400-420", click on "Part 403", goes to "Table of Contents 403.6(e)".

Black Mountain Sewer Practice Code

Black Mountain Sewer Company

PRETREATMENT STANDARDS TARIFF

EXECUTIVE SUMMARY

Black Mountain Sewer Company ("BMSC" or "Company") hereby declares that the following Code of Practice has been prepared and adopted to provide for pretreatment standards in the maintenance and operation of wastewater treatment at the Company's Wastewater Treatment Facility ("WWTF"). This Code of Practice shall be filed with the Arizona Corporation Commission and made part of BMSC's Wastewater Service Tariff, Part Four, Section I.B [Waste Limitations].

BMSC hereby expressly reserves the right to make any lawful addition and/or revisions in this Code of Practice when and as they may become advisable to properly manage the WWTF and to promote the peace, health, safety and welfare of the customers that will be served. This Code of Practice is supplementary to, and are not to be construed as, any abridgement of any lawful rights of the Company as outlined in the Arizona Revised Statutes governing Public Utilities (Title 40) and the Arizona Administrative Corporation Commission Rules on Sewer (Title 14, Article 6), including the right to disconnect or to refuse permission to connect a customer to the Company's wastewater system for violation of this Code of Practice or any other applicable law of the State of Arizona.

This Code of Practice incorporates pretreatment standards per 40 CFR 403, A.A.C. Title 12, Article 4, and A.A.C. Title 18, Chapter 9, Article 3. This Code of Practice is enforceable per the authority granted to wastewater utilities established under A.A.C. Title 14, Chapter 2, Article 6 of the Arizona Administrative Code.

Black Mountain Sewer Practice Code

Black Mountain Sewer Company

CODE OF PRACTICE (BMSC-CP-01-DEF)

SECTION 1 – DEFINITIONS

A. PROHIBITED WASTE

Prohibited waste means:

1. Air Contaminant Waste

Any waste other than sanitary waste which, by itself or in combination with another substance, is capable of creating, causing or introducing an air contaminant outside any sewer or sewage facility or is capable of creating, causing or introducing an air contaminant within any sewer or sewage facility which would prevent safe entry by authorized personnel.

2. Flammable or Explosive Waste

Any pollutants which create a fire or explosion hazard to the sewer or any waste other than sanitary waste which, which by itself or in combination with another substance, is capable of causing or contributing to an explosion or supporting combustion in any sewer or sewage facility including, but not limited to gasoline, naphtha, propane, diesel, fuel oil, kerosene or alcohol.

3. Obstructive Waste

Any waste other than sanitary waste which, by itself or in combination with another substance, is capable of obstructing the flow of, or interfering with, the operation or performance of any sewer or sewage facility including, but not limited to: earth, sand, sweepings, gardening or agricultural waste, ash, chemicals, paint, metal, glass, sharps, rags, cloth, tar, asphalt, cement-based products, plastic, wood, waste portions of animals, fish or fowl and solidified fat.

4. Corrosive Waste

Any waste other than sanitary waste which, with corrosive properties which, by itself or in combination with any other substance, may cause damage to any sewer or sewage facility or which may prevent safe entry by authorized personnel.

5. High Temperature Waste

Any waste other than sanitary waste which, by itself or in combination with another substance, will create heat in amounts which will interfere with the operation and maintenance of a sewer or sewage facility or with the treatment of waste in a sewage facility;

Any waste other than sanitary waste which, will raise the temperature of waste entering any sewage facility to 40 degrees Celsius (104 degrees Fahrenheit) or more; or any non-domestic waste with a temperature of 65 degrees Celsius (150 degrees Fahrenheit) or more.

Black Mountain Sewer Practice Code

6. Biomedical Waste

Any of the following categories of biomedical waste: human anatomical waste, animal waste, untreated microbiological waste, waste sharps, medical products, and untreated human blood and body fluids known to contain viruses and agents.

7. Miscellaneous Wastes

Any storm water, surface water, groundwater, roof runoff, or surface drainage is prohibited.

8. Dilution Wastes

Any discharge that has been in any way, been diluted as a substitute for pretreatment, for the purposes of obtaining compliance with any categorical standard or pretreatment requirement or any other requirement imposed by this article except where dilution is expressly authorized by any categorical standard.

9. Other Discharge Limitations.

Any discharge that is transported from the point of generation to the sewer by any hauler, unless the hauler has first:

- a. Obtained authorization to discharge from the Company.
- b. Disclosed the nature, origin, and volume of the discharge.

Any waste, other than sanitary waste, which by itself or in combination with another substance:

- a. constitutes or may constitute a significant health or safety hazard to any person;
- b. Any waste other than sanitary waste which may interfere with any sewer or sewage treatment process;
- c. may cause a discharge from a sewage facility to contravene any requirements by or under any ADEQ or NPDES discharge permit or any other act, approved Waste Minimization Plan (WMP), or any other law or regulation governing the quality of the discharge, or may cause the discharge to result in a hazard to people, animals, property or vegetation;
- d. may cause bio-solid to fail criteria for beneficial land application.

B. RESTRICTED WASTE (BMSC-CP-01-001)

Restricted waste means:

1. Specified Waste

Any waste other than sanitary waste which, at the point of discharge into a sewer, contains any contaminant at a concentration in excess of the limits set out below. All concentrations are expressed as total concentrations which includes all forms of the contaminant, whether dissolved or un-dissolved. The concentration limits apply to both grab and composite samples. Contaminant definitions and methods of analysis are outlined in standard methods.

Black Mountain Sewer Practice Code

CONVENTIONAL CONTAMINANTS [mg/L]	
Biochemical Oxygen Demand (BOD)	350
Chemical Oxygen Demand (COD)	1000
Oil and Grease	100
Suspended Solids	350

ORGANIC CONTAMINANTS (mg/L)	
Benzene	0.035
Ethyl Benzene	Reserved
Toluene	Reserved
Xylenes	Reserved
Reserved	Reserved
Chloroform	2.0
Oil and Grease (hydrocarbons)	15

PARAMETER Limitation (mg/L)	Daily Average Effluent
Arsenic (As)	0.13
Cadmium (Cd)	0.047
Chloride (Cl)	Reserved

Black Mountain Sewer Practice Code

Chromium (Cr)	Reserved
---------------	----------

2 Note: Polynuclear Aromatic Hydrocarbons (PAH) include:

- naphthalene benzo(a)anthracene
- acenaphthylene chrysene
- acenaphthene benzo(k)fluoranthene
- fluorene benzo(k)fluoranthene
- phenanthrene benzo(a)pyrene
- anthracene dibenzo(a,h)anthracene
- fluoranthene indeno(1,2,3-cd)pyrene
- pyrene benzo(g,h,i)perylene

Cobalt (Co)	Reserved
Copper (Cu)	1.5
Cyanide (CN)	2.0
Iron (Fe)	Reserved
Lead (Pb)	0.41
Manganese (Mn)	Reserved
Mercury (Hg)	0.0023
Molybdenum (Mo)	Reserved
Nickel (Ni)	Reserved
Selenium (Se)	0.10
Silver (Ag)	1.2
Sulfate (SO ₄)	Reserved
Sulfide (S)	N/A
Zinc (Zn)	3.5

Black Mountain Sewer Practice Code

2. Food Waste

Any solid or viscous pollutants, animal fats, oil, and grease (FOG) in amounts that may cause obstruction to the flow in sewers or pass through or other interference or damage to the sewer collection system. Any pollutant, including oxygen demanding pollutants (BOD, COD, TOC, etc.) released in a discharge flow at a rate and/or pollutant concentration which may cause interference with the sewer collection system or wastewater treatment process. This also includes petroleum oil, non-biodegradable cutting oil, or other products of mineral oil origin in amounts that may cause interference or pass through at the wastewater treatment facility.

3. Radioactive Waste

Any discharge containing a toxic, radioactive, poisonous or other substances in which sufficient quantity to cause or have the potential to cause injury or damage to a person or property or interference with any sewage treatment process, cause corrosive structural damage, constitute a hazard to humans or create any hazard to the sewer system or the effluent of the sewer system.

4. pH Waste

Any discharge with a pH less than 5.0 standard units (SU) or greater than 10.5 SU as determined by either a grab or a composite sample.

5. Dyes and Coloring Material

Dyes or coloring materials which may pass through a sewage facility and discolor the effluent from a sewage facility except where the dye is used by the Sewer Company, or one or more of its agents, as a tracer.

6. Miscellaneous Restricted Wastes

Any of the following wastes:

- a. 4,4' - DDE
- b. 4,4' - DDT
- c. Aldrin
- d. BHC—Alpha
- e. BHC—Beta
- f. BHC—Gamma (Lindane)
- g. Heptachlor.
- h. Heptachlor epoxide.
- i. Polychlorinated biphenyl compounds (PCB's)
- j. chlorinated phenols¹

¹ include:

- chlorophenol (ortho, meta, para)
- dichlorophenol (2,3, 2,4-, 2,5-, 2,6-, 3,4-, 3,5-)
- trichlorophenol (2,3,4-, 2,3,5-, 2,3,6-, 2,4,5-, 2,4,6-, 3,4,5-)
- tetrachlorophenol (2,3,4,5-, 2,3,4,6-, 2,3,5,6-)
- pentachlorophenol

Black Mountain Sewer Practice Code

- k. pesticides
- l. herbicides
- m. tetrachloroethylene

Approved: _____

Responsible Agent: Operations

Black Mountain Sewer Practice Code

Black Mountain Sewer Company.

CODE OF PRACTICE (BMSC-CP-01-002)

SECTION 2 - DENTAL OPERATIONS

I. APPLICATION

This code of practice for dental operations defines mandatory requirements for managing non-domestic waste discharged directly or indirectly into a sewer connected to a sewage facility.

This code of practice applies to dental operations.

II. DISCHARGE REGULATIONS

An operator of a dental operation must not discharge waste which, at the point of discharge into a sewer, contains:

- a. prohibited waste, special waste, or storm water ; or
- b. restricted waste with the exception of mercury measured at the point of discharge from a certified amalgam separator.

An operator of a dental operation that produces liquid waste from photographic imaging containing silver shall comply with the requirements of BMSC-CP-01-001.

An operator of a dental operation that produces wastewater containing dental amalgam must either:

- a. collect and transport the wastewater from the dental operation for off-site waste management; or
- b. treat the wastewater at the dental operation site prior to discharge to the sewer using a certified amalgam separator.

An operator of a dental operation must install and maintain the amalgam separator according to the manufacturer's or supplier's recommendations in order that the amalgam separator functions correctly. Such separator must be certified for use by the manufacturer.

An operator of a dental operation who installs an amalgam separator must ensure that:

- a. all dental operation wastewater that contains dental amalgam is treated using the amalgam separator;
- b. a monitoring point is installed at the outlet of the amalgam separator or downstream of the amalgam separator at a location upstream of any discharge of other waste;
- c. the monitoring point must be installed in such a manner that the total flow from the amalgam separator may be intercepted and sampled; and
- d. the monitoring point shall be readily and easily accessible at all times for inspection.

Black Mountain Sewer Practice Code

If the amalgam separator is located downstream of a wet vacuum system, an operator of a dental operation must ensure that:

- a. the wet vacuum system is fitted with an internal flow control fitting; or
- b. a flow control fitting is installed on the water supply line to the wet vacuum system.

The flow control fitting must be sized to limit the flow to a rate that is no more than the maximum inlet flow rate of the amalgam separator as stated by the manufacturer of the amalgam separator.

An operator of a dental operation must locate an amalgam separator in such a manner that an accidental spill, leak or collecting container failure will not result in waste containing amalgam entering any sewer. If a location is not available, an operator of a dental operation must do one of the following:

- (a) install spill containment to contain spills or leaks from the amalgam separator; or
- (b) cap all floor drains into which liquid spilled from the amalgam separator would normally flow.

An operator of a dental operation must replace the amalgam separator's collecting container when any one of the following occurs:

- (a) the manufacturer's or supplier's recommended expiry date, as shown on the amalgam separator, has been reached; or
- (b) the warning level specified by the manufacturer has been reached; or
- (c) analytical data obtained using a method of analysis outlined in standard methods, or an alternative method of analysis approved by the manager, having a method detection limit of 0.1 mg/L or lower, indicates that the total concentration of mercury in the discharge from the amalgam separator is greater than, or equal to, 0.0023 mg/L.

An operator of a dental operation shall not dispose of dental amalgam collected in an amalgam separator, a collecting container, or any other device, to a sewer.

III. RECORD KEEPING AND RETENTION

An operator of a dental operation that uses an amalgam separator must keep, at the site of installation of the amalgam separator, an operation and maintenance manual containing instructions for installation, use, maintenance and service of the amalgam separator installed.

An operator of a dental operation that uses an amalgam separator must post, at the site of installation of the amalgam separator, a copy of the manufacturer's standard test report pertaining to the amalgam separator installed.

An operator of a dental operation that uses an amalgam separator must keep a record book at the dental operation site that includes the following information pertaining to the amalgam separator installed:

- a. date of installation of the amalgam separator and name of the installation service provider;

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- b. serial number and expiry date of the amalgam separator and/or its components;
- c. maximum recommended flow rate through the amalgam separator, where applicable;
- d. dates of inspection, maintenance, cleaning and replacement of any amalgam separation equipment or components;
- e. dates and descriptions of all operational problems, spills, leaks or collecting container failures associated with the amalgam separator and remedial actions taken;
- f. name, address and telephone number of any person or company who performs any maintenance or disposal services related to the operation of the amalgam separator; and
- g. dates of pick-up of the collecting container for off-site disposal, volume of waste disposed and the location of disposal.

The records must be retained for a period of two years and must be available on request by a company representative.

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CODE OF PRACTICE (BMSC-CP-01-003)

SECTION 3 - DRY CLEANING OPERATIONS

I. APPLICATION

This code of practice for Dry Cleaning operations defines the requirements for managing waste discharged directly or indirectly into a sewer connected to a sewage facility from dry cleaning businesses, or other facilities employing solvent or chemical cleaning routines.

Definitions are included in BMSC-CP-01-DEF.

II. DISCHARGE REGULATIONS

An operator of a dry cleaning operation must not discharge waste, which at the point of discharge into a sewer contains:

- (a) Tetrachloroethylene and Perchlomethylene is prohibited;
- (b) Petroleum solvent in a concentration that is in excess of 15 milligrams per liter as analyzed in a grab sample; and
- (c) Prohibited waste, restricted waste, special waste, storm water, or uncontaminated water.

An operator of a dry cleaning operation that generates wastewater containing tetrachloroethylene or petroleum solvent shall either:

- (a) Collect and transport the wastewater from the dry cleaning operation for off site waste management; or
- (b) Install and maintain a solvent/water separator and holding tank in accordance with this code of practice.

All dry cleaning operations in business that generate wastewater containing tetrachloroethylene or petroleum solvent, but do not have a solvent/water separator and holding tank shall install and maintain a solvent/water separator and holding tank when any of the following occur:

- (a) The dry cleaning operation is renovated, to modify the plumbing or dry cleaning equipment;
- (b) New equipment, designed specifically for dry cleaning, is added to the dry cleaning operation; or
- (c) The discharge from the dry cleaning operation exceeds the discharge limits specified above or any of the restricted waste criteria specified in BMSC-CP-01-DEF.

Solvent Water Separators and Holding Tanks

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Solvent/water separator and holding tank installations must conform to the requirements of this code of practice.

An operator of a dry cleaning operation shall not directly discharge wastewater from the solvent/water separator to a sewage facility

An operator of a dry cleaning operation must:

- (a) Collect the wastewater discharged from a solvent/water separator into a transparent, solvent-compatible, holding tank with a containment capacity 25% larger than the total volume of the solvent/water separator; and
- (b) Allow the wastewater to stand undisturbed for a period of not less than 12 hours following each operating date.

An operator of a dry cleaning operation must check the contents of the holding tank after the specified period of time has elapsed to determine whether the wastewater contains any visible residual solvent. If there is no visible residual solvent in the holding tank, the contents may be discharged to the sewer.

If the holding tank contains any visible tetrachloroethylene or petroleum solvent after the specified period of time, then the tetrachloroethylene or petroleum solvent must be separated and returned to the solvent recovery system. After the removal of all visible solvent, the wastewater may be discharged to the sanitary sewer.

Visual Inspections

An operator of a dry cleaning operation must:

- (a) Visually inspect the solvent/water separator on a daily basis and
- (b) Clean the solvent/water separator at least once every seven (7) days to manufacturer's standards.

Spills and Leaks

An operator of a dry cleaning operation must install spill containment facilities in all chemical storage areas and around all dry cleaning machines.

An operator of a dry cleaning operation must block off all sewer drains within the containment area for chemical storage and dry cleaning equipment to prevent any accidental discharge of solvent to a sewer.

An operator of a dry cleaning operation must inspect all dry cleaning equipment for liquid leaks at least once per day.

An operator of a dry cleaning operation must keep all equipment clean to ensure that leaks are visible. The following areas and items are to be checked for leaks:

- (i) hose connections, unions, couplings and valves
- (ii) machine door gasket and seating
- (iii) filter head gasket and seating

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- (iv) pumps
- (v) base tanks and storage
- (vi) solvent/water separators
- (vii) filter sludge recovery
- (viii) distillation unit
- (ix) diverter valves
- (x) saturated lint in lint baskets
- (xi) holding tanks
- (xii) cartridge filters

An operator of a dry cleaning operation who detects any liquid leak from dry cleaning equipment or chemical storage must repair the leak within 72 hours and must immediately prevent any discharge of contaminants to a sewer.

III. RECORD KEEPING AND RETENTION

Every dry cleaning operation must keep a record book on site for inspection with records from the previous two years.

The following information shall be recorded in the record book:

- (i) record of all inspections done by the operator, employees or other hired personnel;
- (ii) record of any liquid leaks detected and remedial action taken;
- (iii) record of solvent/water separator cleaning;
- (iv) record of holding tank cleaning and solvent transfer; and
- (v) record of all other equipment maintenance and repair.

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CODE OF PRACTICE (BMSC-CP-01-004)

SECTION 4 - FOOD SERVICE OPERATIONS

I. APPLICATION

This code of practice for Food Service operations defines the requirements for managing waste discharged directly or indirectly into a sewer connected to a sewage facility from restaurants, or other facilities employing food service (such as food preparation services) as a primary or secondary business operation. Traps, interceptors and separators shall be provided to prevent the discharge of oil, grease, sand and other substances harmful or hazardous to the building drainage system, the collection system the private sewage disposal system or the sewage treatment plant or processes.

Traps, interceptors and separators shall be installed:

- (a) operators of a food services operation that adds kitchen equipment that discharges oil and grease;
- (b) operators of a food services operation that discharges non-domestic waste to sewer that exceeds any of the restricted waste criteria specified in BMSC-CP-01-DEF; or
- (c) any food service operation, as determined by BMSC's wastewater operations group.
- (d) at new facilities
- (e) at existing facilities, not equipped with a trap. Interceptor or separator, when additions, alternations or remodel are done which increase servicing volume, seating capacity, changes to the menu, etc.
- (f) at existing facilities, equipped with a trap. Interceptor or separator, when additions, alternations or remodel are done which increase servicing volume, seating capacity, changes to the menu, etc.
- (g) at any non-food facilities when additions, alterations, or remodeling is proposed for the purpose of food preparation and service.
- (h) at existing facilities not equipped with a trap, interceptor or separator, which is proposed for the purpose of food preparation and service.

Definitions are included in BMSC-CP-01-

DEF.

II. DISCHARGE REGULATIONS

An operator of a Food Service Operation must not discharge waste, which at the point of discharge into a sewer, contains:

- 1. oil and grease in a concentration that is in excess of 100 milligrams per liter as analyzed in a grab sample;
- 2. suspended solids in a concentration that is in excess of 350 milligrams per liter as analyzed in a grab sample;

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3. 5-day biochemical oxygen demand (BOD₅) in a concentration that is in excess of 350 milligrams per liter in a grab sample;
4. prohibited waste, restricted waste, special waste, storm water, or uncontaminated water.

III. GREASE INTERCEPTORS

Grease interceptors are required to be installed and maintained by the Owner of food service operations within the collection system of BMSC facilities. Grease interceptor installations shall conform to the requirements of this code of practice as well as the City of Scottsdale Chapter 10 Section 1003 - Traps, Interceptors, and Separators.

Interceptors, such as grease, oil, or sand shall be provided by laundries, restaurants, service stations, auto repair shops, carwashes and other industrial users when, in the opinion of BMSC interceptors are necessary for the proper handling of wastewater containing oil and grease or sand or any flammable wastes. Such interceptors shall not be required for domestic users.

Construction:

All traps, interceptors and separators shall be constructed of impervious materials capable of withstanding abrupt and extreme changes in temperature. New or upgraded grease device shall have a three-lid manhole, properly sized per Table 1003.3.4.1. Traps, interceptors and separators shall be watertight, and equipped with easily removable covers. Covers shall be gastight and watertight.

Cleaning and Maintenance:

Cleaning and maintenance must be performed when total volume of captured oil, grease and solids material displaces more than twenty-five (25) percent of the total volume of the trap, interceptor or separator or when the pH of a sample taken from the effluent side of the interceptor drops below 5.0 or when odor generation becomes a health issue or when the Company inspection determines a cleaning is necessary.

Maintenance Records:

All traps, interceptors and separators shall be maintained by the user in efficient operating condition at all times. Written records and documentation of all cleaning, repair, calibration, and maintenance shall be maintained at the facility for a minimum of three (3) years and be made available upon request.

Maintenance Inspection:

All traps, interceptors and separators shall be inspected by BMSC representative during normal working hours. Inspection results shall be made available to person, firm or corporation in reasonable charge of the traps, interceptors and separators. BMSC representative shall require correction in order to enforce BMSC pretreatment code of practices.

Skimming:

Skimming, decanting or discharging of removed waste or wastewater back into any traps, interceptors and separators or any appurtenance of the wastewater collection system is strictly prohibited.

Pumping:

All oil, sand and grease interceptors shall be pumped out or cleaned out completely not less than once every ninety (90) calendar days. Grease traps must be cleaned out completely not less than once every thirty (30) calendar days. Traps and interceptors shall be cleaned more frequently when necessary or required.

Bacteria as a Substitute:

The use of bacteria additives as a supplement to maintenance may be authorized by BMSC when a written request is made to the BMSC which includes material safety data sheets. The addition of emulsifiers, de-emulsifiers, surface active agents, enzymes, or degreasers directly or into any drain leading to any grease removal device is strictly prohibited unless approved by the BMSC.

Use:

Traps, interceptors and separators shall be single user only. When an interceptor can be safely used by multiple user (e.g. food courts), multiple users may be allowed when approved by BMSC. Multiple facilities operated by the same person, firm or corporation may be allowed to connect to a single interceptor when approval from BMSC. The person, firm or corporation in reasonable charge of the trap, interceptor or separator shall take any and all steps necessary to assure adequacy which includes repair, modification or replacement.

Alternate Devices and Technology:

Alternative devices and technologies shall be submitted to BMSC for approval before any such device is installed. The service facility will be required to furnish analytical data demonstrating the effluent discharge concentration to BMSC wastewater collection system will not exceed those listed in BMSC-CP-01-001.

Sizing:

All traps, interceptors and separators shall be properly sized per Table 1. When an interceptor is sized less than five hundred (500) gallons or more than two thousand five hundred (2,500) gallons, the person, firm or corporation making the permit application shall first meet with the BMSC to verify the reduced or increased size has been correctly calculated and that no other options are available.

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Size Modification:

Modifying the size of any trap or interceptor shall only be done when sizing per Table 1 allows the modification. Modifying the size of any trap or interceptor shall not be done without the approval of BMSC.

Domestic Wastewater:

Domestic wastewater shall not be discharged to the interceptor.

Minimization Plan:

All facilities required to install and operate a trap; interceptor or separator shall develop and implement a Waste Minimization Plan pertaining to the disposal of grease, oils, and food bearing wastes.

Best Management:

All establishments requiring a trap, interceptor or separator shall adopt BMP's (Best Management Practices) for handling sources of floatable oils, fat or grease originating within their facility. Proof of employee training in BMP's shall be shown to BMSC upon request.

Wastewater Temperature:

Discharge of wastewater with temperatures in excess of one hundred forty (140) degrees F. or pH of less than 5.0 to any grease control device, including grease traps and grease interceptors, is prohibited.

Other Fixtures:

Toilets, urinals, and other similar fixtures shall not discharge through a grease interceptor.

Minimization Program:

The applicant shall establish and submit a written waste minimization plan (maintenance program) outlining specific methods (Best Management Practices) the facility will use on a daily basis to reduce the discharge of oil and grease as well as solids from entering the interception device and ultimately, the BMSC sewer system. This plan shall be acceptable to and approved by the BMSC. The approved document shall accompany the permit application.

Discharge Permit:

This document will be used in lieu of a discharge permit to assist with enforcing all BMSC codes of practices.

Grease interceptors and automatic grease removal devices required:

A grease interceptor or automatic grease removal device shall be required to receive the drainage from fixtures and equipment with grease-laden waste located in food preparation areas, such as in restaurants, hotel kitchens, hospitals, school kitchens, bars, factory cafeterias, caterers, nursing homes, day care center, churches and clubs. Fixtures and equipment shall include pot sinks, pre-rinse sinks; soup kettles or similar devices; work stations; floor drains or sinks into which kettles are drained; automatic hood wash units and dishwashers without pre-rinse sinks. Grease interceptors and automatic grease removal devices shall receive waste only from fixtures and equipment that allow fats, oils or grease to be discharged. Interceptors, such as grease, oil or sand shall be provided at laundries, restaurants, service stations, auto repair shops, carwashes and other industrial users when the proper handling of wastewater containing oil and grease or sand or any flammable wastes is necessary.

Location:

All Interceptors shall be approved and shall be located to be readily and easily accessible for cleaning and inspection.

Food waste grinder:

Where food waste grinders connect to grease interceptors, a solids interceptor shall separate the discharge before connecting to the grease interceptor. Solids interceptors and grease interceptors shall be sized and rated for the discharge of the food waste grinder. Emulsifiers, chemicals, enzymes and bacteria shall not discharge into the food waste grinder. BMSC shall require any user to cease operation of a garbage grinder and permanently remove such equipment when it is determined that the grinder is imposing any adverse effect on interceptor function.

Grease interceptor capacity:

Grease interceptors shall have the grease retention capacity indicated in Table 1 for the flow-through rates indicated. BMSC shall make determinations of interceptor adequacy and need, based on review of all relevant information regarding interceptor performance, facility site and building plan review and to require repairs to, modifications, or replacement of such traps.

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TABLE 1

CAPACITY OF GREASE INTERCEPTORS - EPA-2 Model

A. Determine maximum drainage flow from fixtures:

TABLE INSET:

Type of Fixture	Total Fixtures		Flow Rate		Amount
Restaurant kitchen sink	_____	X	15 gpm	=	_____
Single compartment sink	_____	X	20 gpm	=	_____
Double compartment sink	_____	X	25 gpm	=	_____
2, single compartment sinks	_____	X	25 gpm	=	_____
2, double compartment sinks	_____	X	35 gpm	=	_____
Triple sink 1.5 inch drain	_____	X	35 gpm	=	_____
Triple sink 2 inch drain	_____	X	35 gpm	=	_____
30 gallon dishwasher	_____	X	15 gpm	=	_____
50 gallon dishwasher	_____	X	25 gpm	=	_____
50--100 gallon dishwasher	_____	X	40 gpm	=	_____
B. Total	Divided by number of fixtures			=	gpm
(per kitchen)					

C. Loading Factors

TABLE INSET:

Restaurant type	Fast food-paper delivery	=	.50
	Low volume	=	.50
	Medium volume	=	.75
	High Volume	=	1.0

D. B X C = sub total

E. Total X 60 minutes = maximum flow for one (1) hour

F. Times two (2) hours retention time (based on restaurant volume) = volume of trap in

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gallons = _____

Access and maintenance of interceptors and separators:

Complete access shall be provided to each interceptor and separator for service, maintenance and inspection of the inner chamber(s) and viewing and sampling of effluent wastewater discharged to the sewer. Interceptors and separators shall be maintained by periodic removal of accumulated grease, scum, oil, or other floating substances and solids deposited in the interceptor or separator.

Periodic Inspection:

All traps, inceptors and separators shall be subject to periodic inspections by BMSC during normal operating hours. These inspections can be based on an annual inspection or when a complaint is registered with BMSC regarding a grease-removal device. Should the inspection of any trap, interceptor or separator indicate a violation of any item in (1) thru (3) below, the person, firm or corporation in reasonable charge shall bring the device into compliance within the timeframe noted on the notice of violation, but not longer than fourteen (14) calendar days.

(1) If twenty-five (25) percent of the interceptor is full; both surface (oil and grease) and bottom (solids).

(2) When OSHA (Occupational, Safety and Health Administration) atmospheric levels of Hydrogen Sulfide limits have been exceeded - "Short Term Exposure Limit" (STEL) of fifteen (15) ppm over a fifteen-minute time-weighted average. When the "Immediately Dangerous to Life and Health" (IDLH) level is 100 ppm or above, immediate action shall be performed to return the level of Hydrogen Sulfide to safe and acceptable limits. If the violation cannot be immediately resolved, all use of the Trap, Interceptor or Separator shall cease until compliance is obtained.

(3) When pH in the effluent chamber falls below 5.0 - which is an unhealthy anaerobic interceptor condition.

Maintenance:

Any trap, interceptor or separator not adequately maintained to prevent floatable oils, fat or grease from entering the sewerage system or produce excessive odors shall be in violation of BMSC codes of practice.

Clearing Obstructions:

BMSC shall take appropriate action to clear any obstruction of the BMSC sewer that causes a sewer overflow. When the obstruction is found to be caused by an over-burdened or non-maintained trap, interceptor or separator, the person, firm or corporation in reasonable charge of the trap, interceptor or separator reimbursement of BMSC costs associated with clean-up efforts including any fines leveled against BMSC. Any establishments that continuously violates BMSC code of practice shall be subject to having sewer service discontinued.

Contain and/or Clean Up:

Should BMSC find it necessary to contain and/or clean up a private sanitary sewer overflow caused by blockage of private or public sewer lateral or system, all associated cost shall be the responsibility of the person, firm or corporation in reasonable charge of the property.

Repairs or Replacements:

When repairs or replacements are necessary to a trap, interceptor or separator, all repairs or replacements shall be completed within the time frame stated on the notice to comply. BMSC may authorize a time extension, not to exceed thirty (30) days, for justifiable cause.

Grease Removal:

The person, firm or corporation in reasonable charge shall remove and dispose of grease at a facility permitted to receive and process such waste. Cleaning frequencies shall be dependent on the amount of oil, grease or solids generated at each operation, the size of the grease trap or interceptor, and the approved written waste minimization program, but not to exceed thirty-day intervals for traps and ninety-day intervals for interceptors. Traps and interceptors shall be cleaned by a licensed contractor.

Interference, Operation and Odors:

Any facility whose effluent discharge into the sewerage system causes interference in the conveyance system, operation of the sewerage system, or emits excessive odors shall be required to sample the discharge from the trap, interceptor or separator and have it analyzed for oil and grease and sulfides, total and dissolved. Results of the analysis shall be immediately reported. BMSC may sample the grease interception device at any time, utilizing BMSC representatives. The person, firm or corporation in reasonable charge shall be responsible for any and all associated cost of such testing or sampling.

IV. RECORD KEEPING AND RETENTION

An operator of a food services operation must keep a record at the food services operation of all grease interceptor inspection and maintenance activities including:

- (a) the date of inspection or maintenance;
- (b) the maintenance conducted;
- (c) the type and quantity of material removed from the grease interceptor; and
- (d) the location of disposal of the material removed from the grease interceptor.

The records shall be retained for a period of three years, and shall be available on request by a company representative.

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CODE OF PRACTICE (BMSC-CP-01-005)

SECTION 5 - PHOTOGRAPHIC IMAGING OPERATIONS

I. APPLICATION

This code of practice for photographic imaging operations defines mandatory requirements for managing non-domestic waste discharged directly or indirectly into a sewer connected to a sewage facility.

This code of practice applies to photographic imaging operations. Definitions are included in BMSC-CP-01-DEF.

II. DISCHARGE REGULATIONS

An operator of a photographic imaging operation must not discharge waste which, at the point of discharge into a sewer, contains:

- (a) silver in a concentration that is in excess of 1.2 milligrams per liter (mg/L) as analyzed in a grab sample; or,
- (b) prohibited waste, restricted waste, special waste, storm water, or uncontaminated water as defined in BMSC-CP-01-DEF, other than the following restricted wastes: BOD, and COD.

An operator of a photographic imaging operation that produces liquid waste containing silver must either:

- (a) collect and transport the waste from the photographic imaging operation for off-site waste management; or
- (b) treat the waste at the photographic imaging operation site prior to discharge to the sewer using one of the following silver recovery technologies:
 - (i) two chemical recovery cartridges connected in a series;
 - (ii) an electrolytic recovery unit followed by two chemical recovery cartridges connected in series; or
 - (iii) any other silver recovery technology, or combination of technologies, capable of reducing the concentration of silver in the waste to 1.2 mg/L or less where valid analytical test data has been submitted to, and accepted by, the BMSC wastewater group.

An operator of a photographic imaging operation must install and maintain silver recovery technology according to the manufacturer's or supplier's recommendations.

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An operator of a photographic imaging operation must collect all liquid waste containing silver in a holding tank and must deliver this waste to the chemical recovery cartridges using a metering pump.

An operator of a photographic imaging operation must calibrate the metering pump at least once per year.

Spill/Leak Prevention

An operator of a photographic imaging operation must locate the silver recovery system in such a manner that an accidental spill, leak or container failure will not result in liquid waste containing silver in concentrations greater than 1.2 mg/L entering any sewer.

If a location referred to above is not available, an operator of a photographic imaging operation must do one of the following:

- (a) install spill containment to contain spills or leaks from the silver recovery system; or
- (b) cap all floor drains into which liquid spilled from the silver recovery system would normally flow.

Testing

When using two separate chemical recovery cartridges, an operator of a photographic imaging operation must test the discharge from the first cartridge for silver content at least once per month using either silver test paper or a portable silver test kit.

When the discharge from the first chemical recovery cartridge referred to above cannot be sampled, an operator of a photographic imaging operation must:

- (a) install a cumulative flow meter on the silver recovery system; and
- (b) test the discharge from the second chemical recovery cartridge once per week using silver test paper or a silver test kit.

Cartridge Replacement

An operator of a photographic imaging operation must replace the chemical recovery cartridges when any one of the following occurs:

- (a) the manufacturer's or supplier's recommended expiry date, as shown on each cartridge, has been reached;
- (b) eighty percent (80%) of the manufacturer's or supplier's maximum recommended capacity, or total cumulative flow, for each cartridge has been reached;
- (c) test data, using silver test paper or a silver test kit, indicates that the discharge from the first cartridge is greater than 1000 mg/L; or
- (d) analytical data using a method of analysis outlined in standard methods, or an alternative method of analysis approved by the manager, having a method detection limit of 0.5 mg/L silver or lower, indicates that the concentration of silver in the discharge from the silver recovery system is greater than, or equal to, 1.2 mg/L.

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Approved: _____

Responsible Agent: Operations

III. RECORD KEEPING AND RETENTION

An operator of a photographic imaging operation that uses a silver recovery system must keep, at the photographic imaging operation site, an operation and maintenance manual pertaining to all equipment used in the silver recovery system.

An operator of a photographic imaging operation that uses two chemical recovery cartridges connected in series must keep a record book at the photographic imaging operation site which includes the following information recorded for the previous two years:

- (a) serial number of each chemical recovery cartridge used;
- (b) installation date of each chemical recovery cartridge used;
- (c) expiry date of each chemical recovery cartridge used (where provided by manufacturers or suppliers);
- (d) maximum recommended capacity, or total cumulative flow, of each chemical recovery cartridge used;
- (e) dates of all metering pump calibrations;
- (f) monthly silver test results on the discharge from the first chemical recovery cartridge; or where the discharge from the first cartridge cannot be sampled, weekly silver test results on the discharge from the second chemical recovery cartridge and weekly cumulative flows through the silver recovery system; and
- (g) dates and descriptions of all operational problems associated with the chemical recovery cartridges and remedial actions taken.

¹ If treatment of liquid waste with two chemical recovery cartridges connected in series is the only silver recovery technology being used, then the owner of the photographic imaging operation must replace both chemical recovery cartridges when one of the events referred to occurs.

If treatment of liquid waste with two chemical recovery cartridges connected in series is used following treatment by an electrolytic recovery unit, the second cartridge may replace the used first cartridge and a new second cartridge may be installed when one of the events referred to occurs.

Both chemical recovery cartridges used following an electrolytic recovery unit must be replaced by the operator of the photographic imaging operation when one of the events referred to above occurs if this is recommended by the manufacturer or supplier of the cartridges.

An operator of a photographic imaging operation that uses an electrolytic recovery unit in addition to two chemical recovery cartridges connected in series must keep a record book at the photographic imaging operation site which includes the following information recorded for the previous two years:

- (a) all information specified above;
- (b) date of each removal of silver from the electrolytic recovery unit;
- (c) date of each maintenance check on the electrolytic recovery unit;
- (d) dates and descriptions of all operational problems associated with the electrolytic recovery unit and remedial actions taken.

Black Mountain Sewer Practice Code

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CODE OF PRACTICE (BMSC-CP-01-006)

SECTION 6 - RV PARK OPERATIONS

I. APPLICATION

This code of practice for RV park operations defines the requirements for managing waste discharged directly or indirectly into a sewer connected to a sewage facility from RVs, mobile homes, trailers, watercraft and other sources which employ storage, chemical disinfection/stabilization and discharge as a waste disposal mechanism.

This code of practice applies to all RV park operations. Definitions are included in BMSC-CP-01-DEF.

II. DISCHARGE REGULATIONS

An operator of an RV park operation must not discharge waste, which at the point of discharge into a sewer, contains:

1. oil and grease in a concentration that is in excess of 100 milligrams per liter as analyzed in a grab sample;
2. suspended solids in a concentration that is in excess of 350 milligrams per liter as analyzed in a grab sample;
3. 5-day biochemical oxygen demand (BOD₅) in a concentration that is in excess of 350 milligrams per liter in a grab sample;
4. prohibited waste, restricted waste, special waste, storm water, or uncontaminated water.

If the RV park operation accepts RV customers with the intention of providing sewerage hook-ups, that practice is only acceptable if one of the following conditions is met:

1. If the RV park operation has a dedicated pre-treatment facility, that facility must be used for the disposal of the first discharge of wastewater from any entering RVs. The facility must be maintained as per manufacturer's or engineer's operating instructions. Discharge from that facility which is directed to a sewer connected to a sewerage facility shall be metered such that large slugs of waste are not introduced to the sewer instantaneously. Discharges from such facilities to sewers are limited to 10% of the ADWF (in USGPM) experienced in the sewer.
2. In the absence of a dedicated pre-treatment facility, the RV park operation shall require incoming RVs to certify that, prior to connection to a sewer, that the holding tanks of the RV have been discharged at an approved facility.

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Approved: _____

Responsible Agent: Operations

III. RECORD KEEPING AND RETENTION

An operator of an RV park operation must keep a record at the RV park operation of:

1. all disposals of RV waste into a dedicated pre-treatment facility;
2. Pre-treatment facility inspection and maintenance activities including:
 - a. the date of inspection or maintenance;
 - b. the maintenance conducted; and
 - c. the type and quantity of material removed from the facility;
3. Certifications of waste disposal prior to hook up of RVs to sewer services.

The records shall be retained for a period of two years, and shall be available on request by BMSC representative.

Black Mountain Sewer Practice Code

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CODE OF PRACTICE (BMSC-CP-01-007)

SECTION 7 – PRETREATMENT/INDUSTRIAL WASTE CONTROL

I APPLICATION

This Section is adopted by the Company in accordance with the authority conferred in the Clean Water Act, and any regulations implementing the Clean Water Act, including, but not limited to, 40 CFR 403.8, applicable Arizona Revised Statutes, including but not limited to 49 A.R.S. 2, applicable Arizona Administrative Code, including but not limited to 18 A.A.C. 9 and 18 A.A.C. 11, and with all the powers thereof which are specifically granted to the Company, or are necessary or incidental to or implied from power specifically granted therein for carrying out the objectives and purposes of the Company and this Section.

II. COMPLIANCE

The Pretreatment/Industrial Waste Control Program is designed to enable the Company to comply with all conditions of any applicable Aquifer Protection Permit (APP), Federal Pretreatment Regulations, Arizona Pretreatment Regulations, and any applicable sludge disposal regulations, and to meet the following objectives:

(a) To prevent the introduction of pollutants into the Company's Facilities which will interfere with the operation of the wastewater systems or contaminate the sludge.

(b) To prevent the introduction of pollutants into the wastewater system which will pass through the wastewater system, inadequately treated, into the receiving waters or the atmosphere.

(c) To prevent the introduction of pollutants into the wastewater system which might constitute a hazard to humans or to animals.

(d) To assure the Company's ability to recycle and reclaim wastewater and sludge.

(e) To protect human health and welfare, the environment, property and the Company's wastewater system.

II. DISCHARGE REGULATIONS

A. General Discharge Limitations

No customer shall contribute or cause to be contributed, directly or indirectly, any pollutant or wastewater which will interfere with the operation or performance of the Company's wastewater system. These general prohibitions apply to all customers of the Company whether or not the customer is subject to National Categorical Pretreatment Standards or any other national, State, Company, or local pretreatment standards or requirements.

B. Specific Discharge Limitations

No User shall discharge into the Company wastewater system or into any connected sewer system at any time or over any period of time, wastewater containing any of the following materials and substances in excess of the limitations provided herein. These limitations may also be imposed directly on process wastewaters prior to dilution by domestic and other wastewaters discharged by a customer:

	Contaminant	Limit in mg/L
1.	Arsenic	0.13
2.	Cadmium	0.047
3.	Cyanide	2.0
4.	Copper	1.5
5.	Lead	0.41
6.	Mercury	0.0023
7.	Molybdenum	Reserved
8.	Nickel	Reserved
9.	Selenium	0.10
10.	Silver	1.2
11.	Zinc	3.5

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Once promulgated, National Categorical Pretreatment Standards for a particular industrial subcategory, if more stringent, shall supersede all conflicting discharge limitations contained in this Section 7, as they apply to that industrial subcategory.

State requirements and limitations on discharges shall apply in any case where they are more stringent than federal requirements and limitations or those contained elsewhere in this Code.

C. Prohibited Discharges

None of the following described sewage, water, substances, materials, or wastes shall be discharged into the Company's wastewater system or into the sewer system by any customer, and each governing body of any applicable Service Provider shall prohibit and shall prevent such discharges by any BMSC customer, either directly or indirectly, into its sewer system:

(a) Any liquids, solids or gases which by reason of their nature or quantity are, or may be, sufficient either alone or by interaction with other substances to cause fire or explosion or be injurious in any other way to the Company's wastewater system, the sewer system of a Service Provider or any of its connectors, or to the operation of the Company. At no time shall any reading on an explosion hazard meter, at the point of discharge into the Company's wastewater system or the sewer system of a Service Provider or any of its customers (or at any point in the wastewater systems), or at any monitoring location designated by the Company in a wastewater contribution permit, be more than ten percent (10%) of the Lower Explosive Limit (LEL) of the meter. Prohibited materials include, but are not limited to, gasoline, kerosene, naphtha, benzene, toluene, xylene, ethers, alcohols, ketones, aldehydes, peroxides, chlorates, perchlorates, tetrachloroethylene, perchloroethylene, bromates, carbides, hydrides, and sulfides.

(b) Any solid or viscous material which could cause an obstruction to flow in the sewers or in any way could interfere with the treatment process, including as examples of such materials but without limiting the generality of the foregoing, significant proportions of ashes, wax, paraffin, cinders, sand, mud, straw, shavings, metal, glass, rags, lint, feathers, tars, plastics, wood and sawdust, paunch manure, hair and fleshings, entrails, lime slurries, beer and distillery slops, grain processing wastes, grinding compounds, acetylene generation sludge, chemical residues, acid residues, food processing bulk solids, snow, ice, and all other solid objects, material, refuse, and debris not normally contained in sanitary sewage.

(c) Any wastewater having a pH less than 5.0 for discharges from Industrial Customers into the Company's wastewater system or the sewer system of a Service Provider or that of any of its Customers, or less than 5.0 or greater than 10.5 for other discharges into the Company's wastewater system, or wastewater having any other corrosive property capable of causing damage or hazard to any part of the Company's wastewater system or the sewer system of a Service Provider or any of its Customers, or to personnel.

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(d) Any wastewater having a temperature which will inhibit biological activity at the Company's treatment plant, but in no case wastewater containing heat in such amounts that the temperature at the introduction into the Company's wastewater treatment exceeds 40°C (104°F).

(e) Any pollutants, including oxygen demanding pollutants (BOD, COD, etc.) released at a flow rate and/or pollutant concentration which cause Upset. In no case shall a slug load have a flow rate or contain concentrations or qualities of pollutants that exceed for any time period longer than fifteen (15) minutes more than five (5) times the average twenty-four (24) hour concentration, quantities, or flow during normal operation.

(f) Any water or wastes containing a toxic substance (such as Chlorine, etc.) in sufficient quantity, either singly or by interaction with other substances, to injure or interfere with any sewage treatment process, to constitute a hazard to humans or to animals, or to create any hazard or toxic effect in the waters which receive the treated or untreated sewage.

(g) Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin, each in amounts that will cause interference.

(h) Pollutants which result in the presence of toxic gases, vapors, or fumes within the system in a quantity that may cause acute worker health and safety problems.

(i) Any trucked or hauled pollutants except at discharge points designated by the Company.

(j) Any water or wastes containing pollutant quantities or concentrations exceeding the limitations in Section 7 of this Code of Practice, or the limitations in any applicable Categorical Standards.

III. HAZARDOUS WASTE DISCHARGE NOTICE

Any customer disposing of industrial waste shall notify the Company, the EPA Regional Waste Management Division Director, and the state hazardous waste authorities in writing of any discharge into the Company's wastewater system of any substance which, if otherwise disposed of, would be considered a hazardous waste under 40 CFR Part 261. The specific information required to be reported and the time frames in which it is to be reported are found at 40 CFR §403.12(p).

IV. REPORTING REQUIREMENTS FOR SIGNIFICANT INDUSTRIAL USERS

[RESERVED]

V. MONITORING BMSC FACILITIES

The Company may require to be provided and operated, at the customer's own expense, monitoring facilities to allow inspection, sampling, and flow measurement of any discharges as necessary to determine compliance with the provisions of this Code.

There shall be ample room in or near such sampling manhole or facility to allow accurate sampling and preparation of samples for analysis. The facility, sampling, and measuring equipment shall be maintained at all times in a safe and proper operating condition at the expense of the customer.

The sampling and monitoring facilities shall be provided in accordance with the Company's requirements and all applicable local construction standards and specifications. Construction shall be completed within such a time frame as the Company shall specify by written notification.

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SECTION 8 – NONCOMPLIANCE / ENFORCEMENT

I. NOTICE OF VIOLATIONS

Whenever the Company determines that any customer has violated or is violating any provision of this Code, or any directives, orders, or permits issued or approved to which the Company is bound, the Company may serve upon such customer a written notice ("Notice") stating the nature of the violations(s) in accordance with A.A.C. R14-2-609.C, and requiring that the customer correct the violation(s) within a specified period of time; perform such tasks as the Company determines are necessary for the customer to correct the violations; or perform such tasks and submit such information as is necessary for the Company to evaluate the extent of noncompliance or to determine appropriate enforcement actions to be taken in conjunction with the applicable regulatory agencies. A copy of the Notice shall also be provided to the Director of the Utilities Division of the Arizona Corporation Commission.

II. SUSPENSION OF SERVICE

If the customer does not cure the violation, or present a satisfactory plan of remediation to Company, within the time specified in the Notice, then Company may suspend or disconnect wastewater treatment service in accordance with A.A.C. R14-2-609.C.

In addition, the Company may suspend wastewater treatment service, in accordance with A.A.C. R14-2-609.B (without notice), when such suspension is necessary, in the opinion of the Company, in order to stop an actual or threatened discharge which presents or may present an imminent or substantial endangerment to the health or welfare of persons, to the environment, or causes the Company to violate any condition of its aquifer protection permit.

Any customer notified of an immediate suspension of the wastewater treatment service shall immediately stop or eliminate the discharge. In the event of a failure of the customer to comply voluntarily with the cease and desist request, the Company shall take such steps as deemed necessary, including immediate severance of the sewer connection, to prevent or minimize damage to the company's wastewater system or endangerment to any individuals or the environment. Any action that results in the immediate suspension of service, or disconnection, of a customer shall be reported to the Director of the Utilities Division of the Arizona Corporation Commission Maricopa County Environmental Services Department (MCESD) within twenty-four (24) hours of the suspension or disconnection. Any reconnection of the affected customer shall be in accordance with the Company's Tariff for which the customer must pay the cost of disconnection and reconnection, plus the cost of parts and installation of an Elder valve (or similar equipment) to allow for easier disconnection in the event of a repeated discharge offense by customer.